

BEFORE SUBMITTING YOUR BID

- 1. Use pen and ink to complete the Bid.**
- 2. Have you signed and completed the Contract Agreement, Offer & Award Forms?**
- 3. As a minimum, the Bidder will submit a Bid Package consisting of the Notice to Contractors, the completed Acknowledgement of Bid Amendments & Submission of Bid Bond Validation Number form, the completed Schedule of Items, 2 copies of the completed Agreement, Offer, & Award form, a Bid Bond or Bid Guarantee, and any other Certifications or Bid Requirements listed in the Bid Book.**
- 4. Have you included prices for all Bid Items? (“Zero is not considered a bid price.”)**
- 5. Have you included a bid guarantee? Acceptable forms are:**
 - A. Bid Bond on the Department’s prescribed form for 5% of the Bid Amount. (Or forms that do not contain any significant variations from the Department’s forms as solely determined by the Department.)**
 - B. Official Bank Check, Cashier’s Check, Certified Check, U.S. Postal Money Order or Negotiable Certificate of Deposit in the amount stated in the Notice to Contractors.**
- 6. If the written Bid is to be sent, Federal Express overnight delivery is suggested as the package is delivered directly to the DOT Headquarters Building in Augusta. Other means, such as U.S. Postal Services’ Express Mail has proven not to be reliable.**

AND FOR FEDERAL AID PROJECTS

- 7. Have you included your DBE Utilization commitment in the proper amounts and signed the DBE Certification?**

If you need further information regarding Bid preparation, call the DOT Contracts Section at (207)624-3410.

For complete specifications regarding bidding requirements, refer to Section 102 of the Maine Department of Transportation, Standard Specifications, Revision December 2002.

NOTICE

The Maine Department of Transportation is attempting to improve the way Bid Amendments/Addendums are handled, and allow for an electronic downloading of bid packages from our website, while continuing to maintain a planholders list.

Prospective bidders, subcontractors or suppliers who wish to download a copy of the bid package and receive a courtesy notification of project specific bid amendments, must provide an email address to Diane Barnes at the MDOT Contracts mailbox at: MDOT.contracts@maine.gov. Each bid package will require a separate request.

Additionally, interested parties will be responsible for reviewing and retrieving the Bid Amendments from our web site, and acknowledging receipt and incorporating those Bid Amendments in their bids using the Acknowledgement of Bid Amendment Form.

The downloading of bid packages from the MDOT website is not the same as providing an electronic bid to the Department. Electronic bids must be submitted via <http://www.BIDX.com>. For information on electronic bidding contract Rebecca Pooler at rebecca.pooler@maine.gov.

NOTICE

For security and other reasons, all Bid Packages which are mailed, shall be provided in double (one envelope inside the other) envelopes. The *Inner Envelope* shall have the following information provided on it:

Bid Enclosed - Do Not Open

PIN:

Town:

Date of Bid Opening:

Name of Contractor with mailing address and telephone number:

In Addition to the usual address information, the *Outer Envelope* should have written or typed on it:

Double Envelope: Bid Enclosed

PIN:

Town:

Date of Bid Opening:

Name of Contractor:

This should not be much of a change for those of you who use Federal Express or similar services.

Hand-carried Bids may be in one envelope as before, and should be marked with the following information:

Bid Enclosed: Do Not Open

PIN:

Town:

Name of Contractor:

STATE OF MAINE DEPARTMENT OF TRANSPORTATION
Bid Guaranty-Bid Bond Form

KNOW ALL MEN BY THESE PRESENTS THAT_____

_____, of the City/Town of _____ and State of _____

as Principal, and _____ as Surety, a

Corporation duly organized under the laws of the State of _____ and having a usual place of

Business in _____ and hereby held and firmly bound unto the Treasurer of

the State of Maine in the sum of _____ for payment which Principal and Surety bind

themselves, their heirs, executors, administrators, successors and assigns, jointly and severally.

The condition of this obligation is that the Principal has submitted to the Maine Department of

Transportation, hereafter Department, a certain bid, attached hereto and incorporated as a

part herein, to enter into a written contract for the construction of _____

_____ and if the Department shall accept said bid

and the Principal shall execute and deliver a contract in the form attached hereto (properly

completed in accordance with said bid) and shall furnish bonds for this faithful performance of

said contract, and for the payment of all persons performing labor or furnishing material in

connection therewith, and shall in all other respects perform the agreement created by the

acceptance of said bid, then this obligation shall be null and void; otherwise it shall remain in full

force, and effect.

Signed and sealed this _____ day of _____ 20_____

WITNESS:

WITNESS

PRINCIPAL:

By _____

By: _____

By: _____

SURETY:

By _____

By: _____

Name of Local Agency: _____

NOTICE

Bidders:

Please use the attached “Request for Information” form when faxing questions and comments concerning specific Contracts that have been Advertised for Bid. Include additional numbered pages as required.

REQUEST FOR INFORMATION

[illegible][illegible]

Response By:_____ Date:_____

STATE OF MAINE DEPARTMENT OF TRANSPORTATION NOTICE TO CONTRACTORS

Sealed Bids addressed to the Maine Department of Transportation, Augusta, Maine 04333 and endorsed on the wrapper "Bid for building a Salt sand storage building in the town of Ashland will be received from contractors at the Reception Desk, Maine DOT Building, Child Street, Augusta, Maine, until 11:00 o'clock A.M. (prevailing time) on April 21, 2004, and at that time and place publicly opened and read. All other bids will be rejected. **MDOT provides the option of electronic bidding. We accept electronic bids for those bid packages posted on the bidx.com website. Electronic bids do not have to be accompanied by paper bids. Please note: the Department will accept a facsimile of the bid bond; however, the original bid bond must then be received at the MDOT Contract Section within 72 hours of the bid opening.** During this transition, dual bids (one paper, one electronic) will be accepted, with the paper copy taking precedence.

Description: MDOT. PIN 11992.00

Location: In Aroostook, County in the Town of Ashland

Outline of Work: This is a wooden Quonset type structure approximately 60'x70' with laminated wooden arches with metal siding on a concrete frost walls and interior paving and other incidental work.

For general information regarding Bidding and Contracting procedures, contact Scott Bickford at (207)624-3410. Our webpage at <http://www.state.me.us/mdot/project/design/homepg.htm> contains a copy of the schedule of items, Plan Holders List, written portions of bid amendments (not drawings), and bid results. For Project-specific information fax all questions to John Cannell at (207)623-2526. Questions received after 12:00 noon of Monday prior to bid date will not be answered. Bidders shall not contact any other Departmental staff for clarification of Contract provisions, and the Department will not be responsible for any interpretations so obtained. Hearing impaired persons may call the Telecommunication Device for the Deaf at (207) 624-3007.

Plans, specifications and bid forms may be seen at the Maine Department of Transportation, 16 State House Station Augusta Maine Child St. and at the Department of Transportation's Division Office in Presque Isle. They may be purchased from the Department between the hours of 8:00 a.m. to 4:30 p.m. by cash, credit card (Visa/Mastercard) or check payable to Treasurer, State of Maine sent to Maine Department of Transportation, Attn.: Mailroom, 16 State House Station, Augusta, Maine 04333-0016. They also may be purchased by telephone at (207)624-3536 between the hours of 8:00 a.m. to 4:30 p.m. Full size plans \$2.00 (\$4.00 by mail). Half size plans \$2.00 (\$4.00 by mail), Bid Book \$10 (\$13 by mail), Single Sheets \$2, payment in advance, all non-refundable.

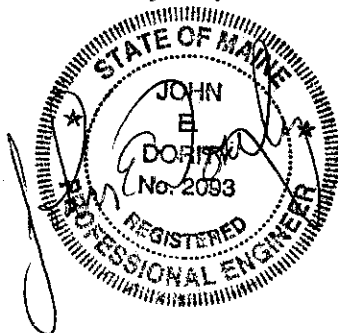
Each Bid must be made upon blank forms provided by the Department and must be accompanied by a bid bond at 5% of the bid amount or an official bank check, cashier's check, certified check, certificate of deposit, or United States postal money order in the amount of \$5,000 payable to Treasurer, State of Maine as a Bid guarantee. A Contract Performance Surety Bond and a Contract Payment Surety Bond, each in the amount of 100 percent of the Contract price, will be required of the successful Bidder.

This Contract is subject to all applicable Federal Laws.

All work shall be governed by "State of Maine, Department of Transportation, Standard Specifications, Revision of December 2002", price \$10 [\$13 by mail], and Standard Details, Revision of December 2002, price \$20 [\$25 by mail]. Standard Detail updates can be found at <http://www.state.me.us/mdot/project/design/homepg.htm>

The right is hereby reserved to the MDOT to reject any or all bids.

Augusta, Maine
Date 4/7/2004



JOHN E. DORITY
CHIEF ENGINEER

SPECIAL PROVISION 102.7.3
ACKNOWLEDGMENT OF BID AMENDMENTS
&
SUBMISSION OF BID BOND VALIDATION NUMBER (IF APPLICABLE)

With this form, the Bidder acknowledges its responsibility to check for all Amendments to the Bid Package. For each Project under Advertisement, Amendments are located at <http://www.maine.gov/mdot/comprehensive-list-projects/project-information.php>. It is the responsibility of the Bidder to determine if there are Amendments to the Project, to download them, to incorporate them into their Bid Package, and to reference the Amendment number and the date on the form below. The Maine DOT will not post Bid Amendments any later than noon the day before Bid opening without individually notifying all the planholders.

Amendment Number	Date

The Contractor, for itself, its successors and assigns, hereby acknowledges that it has received all of the above referenced Amendments to the Bid Package.

CONTRACTOR

Date

Signature of authorized representative

(Name and Title Printed)

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street, Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, and _____

_____ a corporation or other legal entity organized under the laws of the State of Maine, with its principal place of business located at _____

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the "Contract"), hereby agree as follows:

A. The Work

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, **Pin No.11992.00**, for the Construction of a **Salt / Sand Storage Building** in the town of **Ashland**. County of **Aroostook, Maine**, The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work including construction quality control including inspection, testing and documentation, all required documentation at the conclusion of the project, warranting its work and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract; payment to be made as provided in the same.

B. Time

The Contractor agrees to complete all Work, except warranty work, on or before **October 30, 2004**. Further, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of Standard Specifications, Revision of December 2002.

C. Price

The LUMP SUM Bid Price will be used as the basis for determining the amounts of the required Performance Surety Bond and Payment Surety Bond, and that the amount of this offer is _____

\$_____ Performance Bond
and Payment Bond each being 100% of the amount of this Contract.

D. Contract

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the Plans, Standard Specifications, Revision of December 2002, Standard Details, Revision of 2002 as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in Appendix A to the Division 100 General Conditions (Federal Contract Provisions Supplement), and the Contract are still complete and accurate as of the date of this Agreement.
2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.
3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer

The undersigned, having carefully examined the site of work, the Plans, Standard Specifications, Revision of December 2002, Standard Details, Revision of December 2002 as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of: **A Salt / Sand Storage Building, PIN 11992.00** in the Town of **Ashland, Maine**, on which bids will be received until the time specified in the "Notice to Contractors" do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract".

The Offeror agrees to perform the work required at the price specified above and in" strict accordance with the terms of this solicitation, and to provide the appropriate insurance and bonds if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, which may be ordered by the Resident, and to accept as full compensation the amount determined upon a "Force Account" basis as provided in the Standard Specifications, Revision of December 2002, and as addressed in the contract documents, including Section 109.

Second: That the bid bond at 5% of the bid amount or the official bank check, cashier's check, certificate of deposit or U. S. Postal Money Order in the amount given in the "Notice to Contractors", payable to the Treasurer of the State of Maine and accompanying this bid, shall be forfeited, as liquidated damages, if in case this bid is accepted, and the undersigned shall fail to abide by the terms and conditions of the offer and fail to furnish satisfactory insurance and Contract bonds under the conditions stipulated in the Specifications within 15 days of notice of intent to award the contract.

Third: To begin the Work on the date specified in the Engineer's "Notice to Commence Work" as stated in Section 107.2 of the Standard Specifications, Revision of December 2002, and complete the Work within the time limits given in the Special Provisions of this Contract.

Fourth: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Fifth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute two duplicate originals of this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR

Date

(Signature of Legally Authorized Representative
of the Contractor)

Witness

(Name and Title Printed)

G. Award

Your offer is hereby accepted. This award consummates the Contract, and the documents referenced herein.

MAINE DEPARTMENT OF TRANSPORTATION

Date

By: David A. Cole, Commissioner

Witness

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street, Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, and _____

_____ a corporation or other legal entity organized under the laws of the State of Maine, with its principal place of business located at _____

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the "Contract"), hereby agree as follows:

A. The Work

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, **Pin No.11992.00**, for the Construction of a **Salt / Sand Storage Building** in the town of **Ashland**. County of **Aroostook, Maine**, The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work including construction quality control including inspection, testing and documentation, all required documentation at the conclusion of the project, warranting its work and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract; payment to be made as provided in the same.

B. Time

The Contractor agrees to complete all Work, except warranty work, on or before **October 30, 2004**. Further, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of Standard Specifications, Revision of December 2002.

C. Price

The LUMP SUM Bid Price will be used as the basis for determining the amounts of the required Performance Surety Bond and Payment Surety Bond, and that the amount of this offer is _____

\$_____ Performance Bond
and Payment Bond each being 100% of the amount of this Contract.

D. Contract

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the Plans, Standard Specifications, Revision of December 2002, Standard Details, Revision of 2002 as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in Appendix A to the Division 100 General Conditions (Federal Contract Provisions Supplement), and the Contract are still complete and accurate as of the date of this Agreement.
2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.
3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer

The undersigned, having carefully examined the site of work, the Plans, Standard Specifications, Revision of December 2002, Standard Details, Revision of December 2002 as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of: **A Salt / Sand Storage Building, PIN 11992.00** in the Town of **Ashland, Maine**, on which bids will be received until the time specified in the "Notice to Contractors" do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract".

The Offeror agrees to perform the work required at the price specified above and in" strict accordance with the terms of this solicitation, and to provide the appropriate insurance and bonds if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, which may be ordered by the Resident, and to accept as full compensation the amount determined upon a "Force Account" basis as provided in the Standard Specifications, Revision of December 2002, and as addressed in the contract documents, including Section 109.

Second: That the bid bond at 5% of the bid amount or the official bank check, cashier's check, certificate of deposit or U. S. Postal Money Order in the amount given in the "Notice to Contractors", payable to the Treasurer of the State of Maine and accompanying this bid, shall be forfeited, as liquidated damages, if in case this bid is accepted, and the undersigned shall fail to abide by the terms and conditions of the offer and fail to furnish satisfactory insurance and Contract bonds under the conditions stipulated in the Specifications within 15 days of notice of intent to award the contract.

Third: To begin the Work on the date specified in the Engineer's "Notice to Commence Work" as stated in Section 107.2 of the Standard Specifications, Revision of December 2002, and complete the Work within the time limits given in the Special Provisions of this Contract.

Fourth: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Fifth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute two duplicate originals of this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR

Date

(Signature of Legally Authorized Representative
of the Contractor)

Witness

(Name and Title Printed)

G. Award

Your offer is hereby accepted. This award consummates the Contract, and the documents referenced herein.

MAINE DEPARTMENT OF TRANSPORTATION

Date

By: David A. Cole, Commissioner

Witness

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, and

(Name of the firm bidding the job)
a corporation or other legal entity organized under the laws of the State of Maine, with its principal place of business located at (address of the firm bidding the job)

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the "Contract"), hereby agree as follows:

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, PIN No. 1224.00

for the Hot Mix Asphalt Overlay in the town/city of West Eastport, County of Washington, Maine. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work including construction quality control including inspection, testing and documentation, all required documentation at the conclusion of the project, warranting its work and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract; payment to be made as provided in the same.

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before November 15, 2003. Further, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of the State of Maine Department of Transportation Standard Specifications, Revision of December 2002.

C. Price.

The quantities given in the Schedule of Items of the Bid Package will be used as the basis for determining the original Contract amount and for determining the amounts of the required Performance Surety Bond and Payment Surety Bond, and that the amount of this offer is (Place bid here in alphabetical form such as One Hundred and Two dollars and 10 cents)
\$ (repeat bid here in numerical terms, such as \$102.10) Performance Bond and Payment Bond each being 100% of the amount of this Contract.

D. Contract.

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the Plans, Standard Specifications, Revision of December 2002, Standard Details Revision of December 2002, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications.

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in Appendix A to Division 100 of the Standard Specifications Revision of December 2002 (Federal Contract Provisions Supplement), and the Contract are still complete and accurate as of the date of this Agreement.
2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.
3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer.

The undersigned, having carefully examined the site of work, the Plans, Standard Specifications, Revision of December 2002, Standard Details Revision of December 2002, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of:

PIN 1234.00 West Eastport, Hot Mix Asphalt Overlay,

State of Maine, on which bids will be received until the time specified in the "Notice to Contractors" do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the unit prices in the attached "Schedule of Items".

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached "Schedule of Items" in strict accordance with the terms of this solicitation, and to provide the appropriate insurance and bonds if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, not covered by the attached "Schedule of Items", which may be ordered by the Resident, and to accept as full compensation the amount determined upon a "Force Account" basis as provided in the Standard Specifications, Revision of December 2002, and as addressed in the contract documents.

Second: That the bid bond at 5% of the bid amount or the official bank check, cashier's check, certificate of deposit or U. S. Postal Money Order in the amount given in the "Notice to Contractors", payable to the Treasurer of the State of Maine and accompanying this bid, shall be forfeited, as liquidated damages, if in case this bid is accepted, and the undersigned shall fail to abide by the terms and conditions of the offer and fail to furnish satisfactory insurance and Contract bonds under the conditions stipulated in the Specifications within 15 days of notice of intent to award the contract.

Third: To begin the Work on the date specified in the Engineer's "Notice to Commence Work" as stated in Section 107.2 of the Standard Specifications Revision of 2002 and complete the Work within the time limits given in the Special Provisions of this Contract.

Fourth: The Contractor will be bound to the Disadvantaged Business Enterprise (DBE) Requirements contained in the attached Notice (Additional Instructions to Bidders) and submit a completed Contractor's Disadvantaged Business Enterprise Utilization Plan by 4:30pm on the day of bid opening to the Contracts Engineer.

Fifth: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Sixth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute two duplicate originals of this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR
(Sign Here)

(Signature of Legally Authorized Representative
of the Contractor)
(Witness Sign Here) _____ (Print Name Here)
Witness _____
(Name and Title Printed)

G. Award.

Your offer is hereby accepted.
documents referenced herein.

This award consummates the Contract, and the

MAINE DEPARTMENT OF TRANSPORTATION

Date

By: David A. Cole, Commissioner

(Witness)

State of Maine
Department of Labor
Bureau of Labor Standards
Technical Services Division
Augusta, Maine 04333-0045
Telephone (207) 624-6445

Wage Determination - In accordance with 26 MRSA §1301 et. seq., this is a determination by the Bureau of Labor Standards, of the fair minimum wage rate to be paid laborers and workers employed on the below titled project.

Title of Project ----- Sand & Salt Shed MDOT Pin # 11992.00

Location of Project -- Ashland, Maine in Aroostook County

**2004 Fair Minimum Wage Rates
Building 2 Aroostook County
(other than 1 or 2 family homes)**

Occupation Title	Minimum Wage	Minimum Benefit	Total	Occupation Title	Minimum Wage	Minimum Benefit	Total
Asbestos Abatement Wrkr	\$14.17	\$0.52	\$14.69	Ironworker - Reinforcing	\$14.00	\$1.35	\$15.35
Assembler - Metal Bldg	\$12.00	\$0.00	\$12.00	Ironworker - Structural	\$18.00	\$5.74	\$23.74
Bricklayer	\$20.50	\$2.40	\$22.90	Laborers/Helper/Tender	\$10.50	\$0.72	\$11.22
Bulldozer Operator	\$11.13	\$1.43	\$12.56	Laborer - Skilled	\$12.00	\$1.00	\$13.00
Carpenter	\$15.00	\$1.78	\$16.78	Machine Assembler	\$18.00	\$5.74	\$23.74
Carpenter - Acoustical	\$12.00	\$1.67	\$13.67	Mechanic - Maintenance	\$16.69	\$2.43	\$19.12
Carpenter - Rough	\$12.00	\$1.70	\$13.70	Mechanic - Refrigeration	\$17.50	\$3.15	\$20.65
Cement Mason/Finisher	\$14.00	\$1.46	\$15.46	Millwright	\$18.00	\$1.67	\$19.67
Commun Equip Installer	\$18.31	\$10.84	\$29.15	Oil/Fuel Burner Serv & Instr	\$15.50	\$3.27	\$18.77
Concrete Pump Operator	\$17.00	\$1.61	\$18.61	Painter	\$11.00	\$0.21	\$11.21
Crane Operator <15 Tons	\$16.25	\$2.83	\$19.08	Paperhanger	\$13.00	\$0.00	\$13.00
Dry-Wall Applicator	\$17.50	\$0.00	\$17.50	Pipe/Stm/Sprkler Fitter	\$18.00	\$4.38	\$22.38
Dry-Wall Taper & Finisher	\$17.00	\$1.29	\$18.29	Plumber (Licensed)	\$15.45	\$2.69	\$18.14
Electrician	\$18.53	\$5.27	\$23.80	Plumber Trainee	\$12.00	\$2.69	\$14.69
Electrician Hlpr (Licensed)	\$12.50	\$2.72	\$15.22	Roofer	\$12.00	\$1.46	\$13.46
Elevator Constrctr/Installer	\$27.45	\$10.06	\$37.51	Sheet Metal Worker	\$14.25	\$2.37	\$16.62
Excavator Operator	\$15.62	\$3.27	\$18.89	Sider	\$12.25	\$0.00	\$12.25
Floor Layer	\$12.00	\$1.26	\$13.26	Swimming Pool Installer	\$18.45	\$4.92	\$23.37
Glazier	\$13.00	\$2.02	\$15.02	Tile Setter	\$18.64	\$5.89	\$24.53
Industrial Truck (Fkrlft) Op	\$18.00	\$5.74	\$23.74	Truck Driver - Heavy	\$11.84	\$2.46	\$14.30
Insulation Installer	\$12.00	\$1.28	\$13.28				

The Laborer classifications include a wide range of work duties. Therefore, if any specific occupation to be employed on this project is not listed in this determination, call the Bureau of Labor Standards at the above number for further clarification.

Welders are classified in the trade to which the welding is incidental.

Apprentices - The minimum wage rate for registered apprentices are those set forth in the standards and policies of the Maine State Apprenticeship and Training Council for approved apprenticeship programs.

Posting of Schedule - Posting of this schedule is required in accordance with 26 MRSA §1301 et. seq., by any contractor holding a State contract for construction valued at \$50,000 or more and any subcontractors to such a contractor.

Appeal - Any person affected by the determination of these rates may appeal to the Commissioner of Labor by filing a written notice with the Commissioner stating the specific grounds of the objection within ten (10) days from the filing of these rates with the Secretary of State.

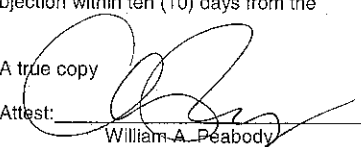
Determination No: B2-033-2004

Filing Date: March 5, 2004

Expiration Date: 12-31-2004

A true copy

Attest:


William A. Peabody
Director
Bureau of Labor Standards

BLS 424BU (R2004) (Building 2 Aroostook)

Town Ashland:
PIN:11992.00
Date:April 7,2004

SPECIAL PROVISION
SECTION 107
Prosecution and Progress
(Contract Time)

107.4.2 Schedule of Work Required: The specified contract completion date is October 30, 2004.

SPECIAL PROVISION SECTION 656
TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL
State Supplied SEWPCP

Section 656 of the Standard Specifications is deleted and replaced by this Special Provision.

656.1 The following information and requirements shall constitute the Soil Erosion and Water Pollution Control Plan for this Project. The soil erosion and water pollution control measures associated with this work are as follows:

- a) All work shall be done in accordance with the latest revision of the Maine Department of Transportation Best Management Practices for Erosion and Sediment Control (a.k.a. Best Management Practices manual or BMP Manual). The "Table of Contents" of the latest version is dated "1/19/00" (available at <http://www.state.me.us/mdot/mainhtml/bmp/bmpjan2000.pdf>.)
- b) The on-site person responsible for implementation of this plan shall be the Contractor's Superintendent or other supervisory employee (the "Environmental Coordinator") with the authority to immediately remedy any deficient controls. The Environmental Coordinator shall provide the Resident with the numbers (telephone number, cellular phone and pager numbers, if applicable) where the Environmental Coordinator can be reached 24 hours a day.
- c) All earth materials shall be disposed of in accordance with all federal, state, and local laws and regulations. If the materials will be stockpiled on-site they shall be contained on-site to prevent sediments from entering any drainage system or from washing into a protected water body or resource.
- d) If the earth materials will be reused on-site, they shall be mulched at the end of each working day, and seeded in accordance with Section 618, unless the contract states otherwise. The materials shall be contained, as necessary, to prevent sediments from entering any drainage system or from washing into a protected water body or resource.
- e) All areas where soil is disturbed shall be permanently mulched on a daily basis and seeded on a weekly basis (if seeded by hand, it shall be done on a daily basis). All previously mulched areas shall be maintained and re-mulched on a daily basis if bare areas develop until an acceptable growth of grass has been obtained.
- f) Winter stabilization BMPs such as double mulching or Erosion Control Mix shall be applied in accordance with the MDOT BMP Manual between November 1 and April 15 or during frozen ground conditions.
- g) The Environmental Coordinator must inspect and maintain daily, all erosion and sediment controls for the duration of the project.
- h) Any costs related to this plan shall be considered incidental to the contract.

656. 2 If the work includes the handling or storage of petroleum products or hazardous materials including the on-site fueling of equipment, the Contractor shall prepare and submit to the Resident Engineer for approval a Spill Prevention Control and Countermeasure Plan (SPCCP) plan. At a minimum, the SPCCP shall include:

- The name and emergency response numbers (telephone number, cellular phone and pager numbers, if applicable) of the Contractor's representative responsible for spill prevention;
- General description and location of (1) handling, transfer, storage, and containment facilities of such products or Materials ("activities and facilities") and (2) potential receptors of such products or Materials including oceans, lakes, ponds, rivers, streams, wetlands, and sand and gravel aquifers ("sensitive resources") including the distances between said activities and facilities and said sensitive resources;
- Description of preventative measures to be used to minimize the possibility of a spill including Equipment and/or Materials to be used to prevent discharges including absorbent Materials,
- A contingency response plan to be implemented if spill should occur including a list of emergency phone/pager numbers including the Contractor's representative, MDEP Spill Response, the Resident, and local police and fire authorities. For a related provision, see 105.2.2 - "Project Specific Emergency Planning".

DOCUMENT 00601
FORM OF GENERAL CONTRACT PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That _____, as Principal and
_____ a corporation duly organized under
the laws of the State of _____ and having a usual place of business
_____ as Surety, are held and firmly bound unto the Treasurer of
the State of Maine in the sum of _____ (\$ _____), to be paid said
Treasurer of the State of Maine or his successors in office, for which payment well and truly to be made, Principal and Surety
bind themselves, their heirs, executors and administrators, successors and assigns, jointly and severally by these presents.

The condition of this obligation is such that if the Principal designated as Contractor in the foregoing contract shall promptly and faithfully perform the contract, then this obligation shall be null and void: otherwise it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the State of Maine. Signed and sealed this _____ day of _____, 20_____.

WITNESSES:

Signature:

SIGNATURES:

CONTRACTOR:

print name legibly

Signature:

print name legibly

SURETY:

print name legibly

SURETY ADDRESS:

print name legibly

NAME, ADDRESS OF LOCAL AGENCY:

TELEPHONE: _____

TELEPHONE: _____

*** END OF SECTION ***

DOCUMENT 00413
FORM OF GENERAL CONTRACT BID BOND

KNOW ALL MEN BY THESE PRESENTS THAT _____
_____, of the _____ of
_____ and State of _____ as Principal,
and _____ as
Surety, a corporation duly organized under the laws of the State of _____ and
having a usual place of business in _____
and hereby held and firmly bound unto the Treasurer of the State of Maine in the sum of
_____ for payment which Principal and Surety bind themselves, their heirs,
executors, administrators, successors and assigns, jointly and severally.

The condition of this obligation is such that if the Principal has submitted to the Maine Department of Transportation, hereafter called Department, a certain proposal, attached hereto and incorporated as a part herein, to enter into a written contract for the construction of A Crew Quarters Building, Maine Department of Transportation, Farmington, Maine and if the Department shall accept said proposal and the Principal shall execute and deliver a contract in the form attached hereto (properly completed in accordance with said proposal) and shall furnish bonds for his faithful performance of said contract and for the payment of all persons performing labor or furnishing material in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said proposal, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

Signed and sealed this _____ day of _____, 20_____.

WITNESS:

PRINCIPAL:

By: _____

By: _____

By: _____

WITNESS:

SURETY:

By: _____

By: _____
name of local agency:

*** END OF SECTION ***

DOCUMENT 00602
FORM OF GENERAL CONTRACT PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

That _____, as Principal and
_____ a corporation duly organized under
the laws of the State of _____ and having a usual place of business
_____ as Surety, are held and firmly bound unto the Treasurer of
the State of Maine for the use and benefit of claimants as herein below defined in the sum of
_____ (\$_____), for the payment whereof Principal and Surety, bind
themselves, their heirs, executors and administrators, successors and assigns, jointly and severally by these presents.

The condition of this obligation is such that if the Principal designated as Contractor in the foregoing contract shall promptly satisfy all claims and demands incurred for all labor and material, used or required by him in connection with the work contemplated by said contract, and shall full reimburse the obligee for all outlay and expense which the obligee may incur in making good any default of said Principal, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

A claimant is defined as one having a direct contract with the Principal or with a subcontractor of the Principal for labor, material or both, used or reasonably required for use in the performance of the contract.

Signed and sealed this _____ day of _____, 20_____.

WITNESSES:

Signature:

print name legibly

Signature:

print name legibly

SURETY ADDRESS:

TELEPHONE: _____

SIGNATURES:

CONTRACTOR:

print name legibly

SURETY:

print name legibly

NAME, ADDRESS OF LOCAL AGENCY:

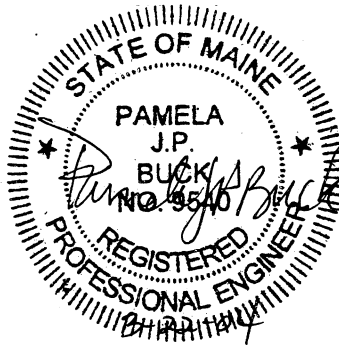
TELEPHONE: _____

*** END OF SECTION ***

**Technical Specifications
Prepared for the**

**Maine Department of Transportation
SAND/SALT STORAGE BUILDING
ROUTE 11
ASHLAND, MAINE**

Route 11
Ashland, Maine



March 22, 2004

Prepared By:

***Buck Engineering, Inc.
409 Main Street
Presque Isle, Maine 04769
Phone 764-2622 Fax 764-1911***

**MDOT Sand/Salt Storage Building
Route #11
Ashland, Maine**

DIVISION 1 - GENERAL REQUIREMENTS

i	Drawings Index	i
ii	Technical Specifications Format Guide	ii
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DIVISION 2 - SITEWORK

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02210	Slope Protection and Temporary Erosion Control	02210-1
02510	Bituminous Pavement	02510-1
02724	Underdrain Pipe	02724-1

DIVISION 3 - CONCRETE

03300	Cast In Place Concrete	03300-1
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DIVISION 6 - CARPENTRY

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DIVISION 9 - FINISHES

09900	Painting and Staining	09900-1
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DIVISION 15 - MECHANICAL

15622	Exhaust Fans	15622-1
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DIVISION 16 - ELECTRICAL

16050	Electrical Wiring	16050-1
16500	Lighting	16500-1

DRAWINGS INDEX

Included in the Contract Documents are the following Drawings:

Sheet Number

Sheet Title

C1

Site Layout / Utilities Plan

A1

Floor Plan / Building Elevations

S1

Foundation Plan and Details

S2

Roof Framing Plan / Building Sections

S3

Building Sections and Details

END OF SECTION

TECHNICAL SPECIFICATIONS

FORMAT GUIDE

The following is a description of the Format Guide for this Project. The following Technical Specifications contain references to other Specifications, i.e., ASTM, MDOT, AASHTO, etc. Where reference is made to other Specifications, those Specifications shall become part of this Contract.

Measurement and Payment. Shall be as described in the following Technical Specifications for the Bid Items listed in the Proposal. Separate payment will not be made for other labor, materials and equipment necessary to complete the work, but such work shall be considered incidental to the various Bid Items.

Layout. The Contractor shall be responsible for all layout, staking, grades, etc., required for the completion of the work and shall employ competent personnel. Layout shall be made from basic reference points furnished by the Engineer at the beginning of the Project. The Contractor shall guard and protect these points for future use and shall be responsible for the accuracy of all layout work made from Engineer's reference points.

Changes in the Work. The Engineer reserves the right at any time to alter grades, alignments, quantities, etc., to better conform to existing conditions or to unforeseen conditions. Substantial changes shall be by Change Order.

Cooperation With Other Utilities. The Owner and other utility companies may be performing other construction during the course of this Project. Contractor shall cooperate and coordinate his work such that all work is completed in a timely and satisfactory manner.

The following Technical Specifications follow the general format and numbering system of the Construction Specifications Institute (CSI).

PART 1 - GENERAL - describes the work covered.

PART 2 - PRODUCTS - describes acceptable materials which may be used in the work.

PART 3 - EXECUTION - describes how the particular type of work is to be done.

PART 4 - SUPPLEMENTAL SPECIFICATIONS - This is an optional part of the specifications and is used only to modify or add to the Specifications. Specific information such as sizes, types, weights, dimensions, product names and the like are found in this Section. Part 4 takes precedence over Parts 1-3 and information found on the drawings.

For projects using unit prices, Section 01025 describes the method of measurement and payment for particular Bid Items.

In case of conflicting information among the various parts of the Contract Documents and Drawings, the following defines the Order of Precedence of the various parts:

1. Technical Specifications, PART 4
2. Technical Specifications, PARTS 1-3
3. Contract Documents
4. Contract Drawings.

Order of Precedence on Contract Drawings:

1. Specific stated information, including notes
2. Dimensions
3. General Notes
4. Scale Drawings.

END OF SECTION

SECTION 01415

CONCRETE TESTING

PART 1 - GENERAL

1.1 Summary

- A. Work included: Perform all sampling and testing of ready-mixed concrete as specified herein.
- B. Related work: Cast-in-Place Concrete, Concrete curing and finishing, concrete joints, concrete form work, concrete reinforcing, concrete accessories, grout and waterstops are specified in Division 3.

1.2 Quality Assurance

- A. All field testing shall be performed by a certified Maine Concrete Testing Technician.
- B. Sampling and testing for quality control during placement of concrete shall conform to the following ASTM requirements:
 - 1. Sampling Freshly Mixed Concrete - ASTM C172.
 - 2. Slump - ASTM C143.
 - 3. Air Content - ASTM C231, normal weight concrete, and ASTM C173 - lightweight concrete.
 - 4. Temperature - ASTM C1064.
 - 5. Making and Curing Concrete Test Specimens in the Field - ASTM C31.
 - 6. Compressive Strength Tests - ASTM C39.

1.3 Submittals

- A. Concrete field test results shall be made available to the Owner, Contractor and Engineer by the testing laboratory on the same day tests are made.
- B. Compressive strength test reports shall contain the project name and number, date of concrete placement, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength and type of break for 7-day and 28-day tests.

1.4 Scheduling and Payment

- A. The Contractor shall notify the Engineer and the testing laboratory at least 48 hours in advance of pouring any concrete.
- B. The Owner's representative shall arrange for all standard tests to be performed by an independent testing laboratory.
- C. Cost for initial testing will be paid for by the Owner. All costs of testing above and beyond the initial concrete tests as a result of failing initial test shall be reimbursed to the Owner by the Contractor.

1.5 Independent Testing Laboratory Responsibilities

- A. Unless otherwise specified, the Independent Testing Laboratory shall be responsible for:
 - 1. Collecting specimens and samples for testing.
 - 2. Providing qualified personnel and suitable equipment for performing tests.
 - 3. Delivering specimens and tests to Laboratory.
 - 4. Submitting results of observations of tests to Owner, Owner's Representative, and Contractor. Reports shall indicate compliance or non-compliance with requirements including specified standards and Contract Documents.
 - 5. Being familiar with the Contract Documents and for determining, subject to Owner's Representative's approval, what testing costs are applicable to Contract Allowances and/or to Contractor.
 - 1. Invoices for testing shall be submitted to Contractor or Owner on the basis of responsibility as specified herein.
 - 2. Testing Laboratories site representative is on site to conduct tests and is not on site as a representative of Owner or in the capacity of the Owner's Representative.

- B. Test will be performed in accordance with requirements of specified standards, or with Contract Documents where applicable. Where standards or test methods are not specified, Testing Laboratory shall consult with Engineer.

1.6 Contractor's Responsibilities

1. Contractor shall:
 1. Cooperate with Testing Laboratory personnel; furnish samples of materials; provide access to the Work; provide ample space for their work; and provide general assistance as requested.
 2. Provide a schedule of tests to be performed for the Project in a timely manner; include Specification Sections involved and subcontractors responsible for work to be tested.
 3. Notify Testing Laboratory no later than 48 hours prior to expected time of required testing services.
 4. Make arrangements with Testing Laboratory and pay for additional samples and tests for Contractor's convenience.
 5. Coordinate accounting of testing costs with the Testing Laboratory. Arrange for separation of costs to be paid by Owner and those by Contractor (such as for retesting of failed materials or additional testing performed for convenience of Contractor) as part of the standard requisition process.

PART 2 - PRODUCTS

2.1 Materials

- A. Concrete materials are specified in Division 3.

2.2 Concrete Cylinder Storage Box

- A. The Contractor shall provide the Testing Laboratory Representative with a concrete cylinder storage box. This box shall be suitable to accommodate four (4) test cylinders with 1" rigid insulation on all four (4) sides of the box and installed between the four (4) cylinders so as to isolate them from damage during shipping. The storage box shall have a latching cover and two (2) handles to facilitate transportation.
- B. The Contractor shall deliver the concrete cylinder storage box to the Project site to the Laboratory's representative prior to pouring any concrete.

PART 3 - EXECUTION

3.1 Tests

- A. Sampling Concrete
1. The Contractor shall afford the testing technician all reasonable access for the procurement of samples of fresh concrete at the time of placement.
 2. Samples shall be obtained after all of the water has been added to the mixer at the site.
- B. Slump
1. Slump tests shall be made for each 50 cubic yards of each type of concrete placed in any one day, with a minimum of one slump test made for each day of concrete placement.
 2. The Engineer may require more frequent slump tests if the concrete delivered does not appear consistent.
 3. Slump test shall be made for the batch from which cylinders for strength tests are made.
- C. Air Content
1. Air content tests shall be made for each 50 cubic yards of each type of concrete placed in any one day, with a minimum of one (1) air content test made for each day of concrete placement.
 2. Air content tests shall be made for the batch from which cylinders for strength tests are made.
- D. Temperature
1. Concrete temperature shall be tested hourly when air temperature is 40F and below, and when 80F and above. A minimum of one concrete temperature test shall be taken for each day of concrete placement.

E. Compressive Strength Tests

1. One set of four standard test cylinders shall be made for each 50 cubic yards of each type of concrete placed in any one day, with a minimum of one set of cylinders required for each day of concrete placement.
2. One test cylinder shall be tested at 7 days, two cylinders tested at 28 days and one cylinder held in reserve. The testing laboratory will determine the necessity of breaking cylinders at intermediate periods.
3. Cylinders shall be appropriately cast and marked. Cylinders shall be stored and shipped in the concrete cylinder storage box supplied by the Contractor.
4. The testing technician making the compressive strength cylinders will be responsible for delivery of the test cylinders to the testing laboratory within 24 to 48 hours of making the specimen.

3.2 Test Results

- A. If the slump or air content falls outside the specified limits, a check test shall be made immediately on another portion of the same sample. In the event of a second failure, the concrete shall be considered to have failed the requirements of the specification.
- B. When the temperature of the concrete is below 40F or above 80F the concrete shall be subject to refusal.
- C. The strength level of the concrete will be considered satisfactory if the average of all the tests equal or exceed the design strength, and no individual test falls below the specified design strength by more than 500 psi.

3.3 Additional Tests

- A. Any additional tests required as a result of unsatisfactory compressive strength tests shall be paid for by the Contractor in the form of a reimbursement to the Owner.
- B. Impact hammers, sonoscopes or other non-destructive testing devices may be used, as approved by the Engineer, to determine relative strengths of the cast-in-place concrete or to determine areas to be cored. Test results will be used as a basis for acceptance or rejection only if these results are properly calibrated and correlated with other test data.
- C. Core tests shall be conducted when required by the Engineer. A minimum of three (3) cores shall be taken from potentially deficient areas. Core locations will be determined by the Engineer.
- D. The strength of the concrete cores shall be considered satisfactory if their average is equal to or greater than 90% of the specified design strength.
- E. All core holes shall be plugged with a mixture of 2 parts grout to 1 part pea gravel, as directed by Engineer.

END OF SECTION

SECTION 01416

SOIL TESTING

PART 1 - GENERAL

1.1 Summary

- A. This section includes requirements for sieve analysis, moisture density tests and compaction test of soil materials necessary for the completion of the work.
- B. Related Sections:
 - 1. Section 02200 - Earthwork
 - 2. Other sections as applicable.

1.2 References

- A. American Society for Testing and Materials (ASTM), Selected Standards, Latest Edition.
- B. Standard Specifications For Highways And Bridges, Maine Department of Transportation (MDOT Specifications), Latest Revision.

1.3 Submittals

- A. The Contractor shall notify the Engineer of all sources of material proposed for incorporation into the work.
- B. Material samples shall receive sieve analysis and moisture density tests (ASTM D1557, Method C or D) at a laboratory employed by the Contractor and approved by the Engineer.
- C. Test results shall be submitted to the Engineer prior to materials being incorporated into the work.
- D. Only materials meeting the requirements of this section and appropriate related sections of the specifications shall be used in the work.
- E. The cost for the above initial testing shall be paid by the Contractor.

PART 2 - PRODUCTS (not applicable)

PART 3 - EXECUTION

3.1 Field Control Testing

- A. Field control testing will be provided by an Independent Testing Laboratory and paid for by the Owner, except where otherwise specified. Contractor to provide minimum of 48 hours notice.
- B. Either the sand cone method (ASTM D1556) or the nuclear density method (ASTM D2992) shall be used to determine the percentage of material compaction. A sufficient number of tests shall be conducted to insure that the specified density is being obtained. A minimum of one test shall be taken for each 12" layer of fill for the following areas:
 - 1. Trench areas - for each 100 linear feet of continuous trench area or part thereof.
 - 2. Foundation Wall Excavations - 1 every 100 linear feet, min. 1 each side.
 - 3. Below Concrete Slabs - 1 every 1,000 sf and a minimum of three tests for each individual slab.
 - 4. Below Paved Area - within each 2,000 square feet of continuous area or part thereof.
- C. Compaction tests shall be arranged by the Engineer in cooperation with the Contractor and paid for by the Owner. Copies of test results shall be distributed to the Owner, the Engineer and the Contractor.
- D. The specific location for each test to be taken and the number of tests to be taken shall be as designated by the Engineer at the time of testing.
- E. Testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor and shall be at no cost to the Owner.

3.2 Retesting

- A. The Engineer may require periodic sieve analysis and/or moisture density testing to be done to insure the material is in conformity with the initial tests submitted. If test results meet specifications and closely resemble initial test results, the cost of the testing shall be paid for by the Owner. If test results indicate a significantly different material or fail to meet specifications, the Contractor shall reimburse the Owner according to the schedule in the following paragraph.
- B. If any test results fail to meet specifications, the Contractor shall correct the situation and obtain a passing test. The Contractor shall reimburse the Owner according to the following schedule for each additional test necessary (including compaction tests, sieve analysis, and moisture density tests) when correcting a failing test.

END OF SECTION

SECTION 02200

EARTHWORK

PART 1 - GENERAL

1.1 Description of Work

- A. Work Included: All excavating, dewatering, filling, backfilling, and removal of materials. Earthwork for utilities is included in this Section.
- B. Related Work Specified Elsewhere Includes:
 - 1. Section 02210 – Slope Protection and Temporary Erosion Control

1.2 Protection

- A. Paved Surfaces: Do not operate equipment on paved surfaces. Paved surfaces outside the specified limits of Work which become damaged shall be repaved by the CONTRACTOR at no additional cost to OWNER.
- B. Maintain excavations with approved barricades, lights, and signs to protect life and property until excavation is filled and graded to a condition acceptable to the ENGINEER.
- C. Protect structures, utilities, sidewalks, pavements, property monuments, monitoring wells, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations. The CONTRACTOR shall be responsible for actual cost of repair or replacement of any items damaged as a result of construction activities. This cost shall include any professional services required for inspection of repairs or replacement.

1.3 Quality Assurance

- A. Standards: 29 CFR 1926/1910 - OSHA Safety and Health Standards; Standard Specification for Highways and Bridges, Maine Department of Transportation, current revision.
- B. Testing and Inspection: See Section 01416 for general requirements. The OWNER shall be responsible for all quality control testing, unless otherwise noted. The CONTRACTOR shall be responsible for quality control coordinating with ENGINEER to allow for testing to be performed at the frequencies specified. A minimum of 48 hours notice for in-place testing shall be given to allow proper scheduling by ENGINEER.
- C. Inspection of Material Sources: The ENGINEER may inspect off-site sources of materials and order tests of these materials to verify compliance with these Specifications.

1.4 Testing Standards

- A. Laboratory and Field Testing: Procedures for testing earthwork shall be performed in accordance with the following standards:
 - 1. Sieve AnalysisASTM D422
 - 2. Field DensityASTM D2922
 - 3. Field Moisture ContentASTM D3017
 - 4. Moisture/Density (Proctor) TestsASTM D698

1.5 Submittals

- A. Material Test Reports: Submit reports on material gradations (sieve analysis) and maximum laboratory moisture density, (proctor).

1.6 Site Conditions

- A. CONTRACTOR may make his own borings, hand probes, explorations and observations to determine soil, water and other subsurface conditions at no cost to OWNER. Coordinate with OWNER prior to start of additional investigative work.

- B. Existing Utilities: Locate existing underground utilities within limits of Work and provide adequate means of support and protection during earthwork operations, if utilities are indicated to remain in place. Coordinate with utility companies for actual locations and shut-off services, if lines are active. Demolish and completely remove from site existing underground utilities indicated to be removed.

PART 2 - PRODUCTS

2.1 Materials

- A. General: All materials utilized for this project shall be obtained from a source approved by ENGINEER. The CONTRACTOR shall be required to submit evidence of compliance with specifications. The CONTRACTOR shall pay for all gradation and proctor testing to prove compliance with specifications. Testing responsibility shall be as outlined in Section 01400. This shall be performed each time soil is obtained from a new source, or the material characteristics change or as determined by the ENGINEER.
1. Suitable Materials: Materials complying with ASTM D2487 soil classification groups GW, SM, SW, and SP or AASHTO M145 soil classification groups A-1, A-2-4, A-2-5, and A-3.
 2. Unsuitable Materials: Material containing excessive amounts of water, blue or plastic clay, vegetation, organic matter, debris, pavement, stones or boulders greater than 12 inches in any dimension, frozen material, and material which, in the opinion of the ENGINEER, will not provide a suitable foundation or subgrade.
 3. On-Site Material: Any suitable material from on-site excavation.
 4. Material for embankments and general fills may contain pieces of excavated ledge having a greatest dimension of up to 12 inches, if approved by the ENGINEER.
 5. Sieve Analysis: Performed in accordance with ASTM D422-63.
- B. Gravel: Hard, durable stone with coarse to fine sand. Sieve analysis by weight:

<u>Sieve Size</u>	<u>Max. % Passing by Weight</u>
3"	100
1/4"	25-70
No. 40	0-30
No. 200	0-5

- C. 3/4" Crushed Stone: Durable, clean angular rock fragments obtained by breaking and crushing rock material. Sieve analysis by weight:

<u>Sieve Size</u>	<u>Max. % Passing by Weight</u>
1"	100
3/4"	95-100
1/2"	35-70
3/8"	0-20
No. 200	0-5

- D. Aggregate Base (MDOT 703.06) Type A: Hard durable gravel containing only particles passing the 2 inch sieve. Sieve analysis by weight:

<u>Sieve Size</u>	<u>Max. % Passing by Weight</u>
2"	100
1/2"	45-70
1/4"	30-55
No. 40	0-20
No. 200	0-5

- E. Aggregate Base (MDOT 703.06) Type B: Hard durable gravel containing only particles passing the 4 inch sieve. Sieve analysis by weight:

<u>Sieve Size</u>	<u>Max. % Passing by Weight</u>
4"	100
1/2"	35-75
1/4"	25-60
No. 40	0-25
No. 200	0-5

- F. Aggregate Base (MDOT 703.06) Type C: Hard durable gravel containing only particles passing the 6 inch sieve. Sieve analysis by weight:

<u>Sieve Size</u>	<u>Max. % Passing by Weight</u>
6"	100
1/4"	25-70
No. 40	0-30
No. 200	0-5

- G. Aggregate Subbase (MDOT 703.06) Type D: Hard, durable stone with coarse to fine sand containing only particles which will pass a 6" square mesh screen. Sieve analysis by weight for the portion passing the 3" sieve:

<u>Sieve Size</u>	<u>Max. % Passing by Weight</u>
1/4"	25-70
No. 40	0-30
No. 200	0-7

- H. Sand: Granular material free from organic matter. Sieve analysis by weight:

<u>Sieve Size</u>	<u>Max. % Passing by Weight</u>
1"	100
1/2"	75-100
No. 4	50-100
No. 20	15-80
No. 50	0-15
No. 200	0-5

- I. Select Borrow: Sieve analysis by weight:

<u>Sieve Size</u>	<u>Max. % Passing by Weight</u>
3"	100
1"	95-100
No. 4	75-100
No. 40	50-85
No. 200	30-60

- J. Common Borrow: Earth suitable for embankment or general fill construction, free from frozen material, plastic clay, vegetation, perishable rubble, peat and other unsuitable materials. The moisture content shall be sufficient to provide required compaction and stable embankment. In no case shall the moisture content exceed 4% above optimum as determined by ASTM D698.
- K. Refill Material: 3/4" crushed stone, for refilling excavation below normal grade, rock excavation or refilling excavated unsuitable material, unless otherwise directed by the ENGINEER.
- L. Select Backfill: Use gravel or 3/4" crushed stone as directed by the ENGINEER.

PART 3 - EXECUTION

3.1 Excavation

- A. General: Remove all materials encountered to the limits shown on the Drawing, or designated in the Specifications.
- B. Classifications: The following classifications of excavation will be made and paid for on a unit cost basis:
1. Rock Excavation for trenches and pits.
 2. Rock Excavation for open excavation.
 3. Excavation below normal grade.
 4. Select backfill.
- C. Earth Excavation: Remove and dispose of pavements and other obstructions visible on ground surface, underground structures and utilities indicated to be demolished and removed, and other materials encountered that are not classified as rock excavation or unauthorized excavation.
- D. Excavation for Structures: Conform to elevations and dimensions shown, within a tolerance of $\pm 0.10'$, and extending sufficient distance from footings and foundations to permit placing and removal of concrete form work, installation of services, other construction, and for inspection. While excavating for structures, take care not to disturb bottom of excavation. Excavate by hand to final grade just before concrete reinforcement is placed. Trim bottoms to required lines and grades to leave solid base to receive other work. Use shoring and bracing where sides of excavation will not support itself.

- E. Rock Excavation for Trenches and Pits: Includes removal and disposal of materials and obstructions encountered that cannot be excavated with modern, track-mounted, heavy-duty excavating equipment without drilling, ripping or blasting; includes boulders larger than 2 cubic yards each. Trenches in excess of 10 feet in width and pits in excess of 30 feet in either length or width are classified as open excavation.
Do not perform rock excavation or excavation of unsuitable materials until material to be excavated has been cross-sectioned and classified by ENGINEER. Predrilling and blasting of bedrock through overburden may be allowed. If this method is used, the rock excavation quantities will be adjusted downward in proportion to the ground swell from this blasting method.
Intermittent drilling or ripping performed to increase production and not necessary to permit excavation of material encountered will be classified as earth excavation.
- F. Rock Excavation in Open Excavations: Includes removal and disposal of materials and obstructions encountered not in a trench or pit that cannot be dislodged and excavated with modern, track-mounted, heavy-duty excavating equipment without drilling, blasting, or ripping.
Do not perform rock excavation or excavation of unsuitable materials until material to be excavated has been cross-sectioned and classified by ENGINEER. Intermittent drilling or ripping performed to increase production and not necessary to permit excavation of material encountered will be classified as earth excavation.
- G. Rock Payment Limits:
1. Two feet outside of concrete work for which forms are required, except footings, base slabs, or anti-floatation slabs.
 2. One-and-a-half feet outside perimeter of footings, base slabs, anti-floatation slabs, and manholes (precast concrete and HDPE).
 3. Pipe trenches as shown on Drawings.
 4. Neat outside dimensions of concrete work where no forms are required.
- H. Excavation in Paved Areas: Sawcut pavement prior to excavation to provide a clean, uniform edge. Minimize disturbance of remaining pavement. Cut and remove the minimum amount of pavement required to do the work.
- I. Excavation for Trenches: Excavate to widths shown on the Drawings and depths indicated or required to establish indicated slope and invert elevations.
Produce an evenly graded, flat trench bottom at the subgrade elevation required for installation of pipe and bedding material.
Place backfill material directly into trench or excavation. Do not stockpile material to be used as backfill along edges of trenches.
- J. Unauthorized Excavation: Removal of materials beyond indicated subgrade elevations or dimensions without specific direction of ENGINEER. Unauthorized excavation, refilling shall be at the CONTRACTOR'S expense.
- K. Refilling Unauthorized Excavation:
1. Trenches: Use $\frac{3}{4}$ " crushed stone as directed by ENGINEER.
 2. Under Concrete Footings: Use concrete of similar strength as structure, see Specification Section 03300.
 3. Elsewhere: Backfill and compact unauthorized excavations as specified for authorized Excavations of same classifications, unless otherwise directed by ENGINEER.
- L. Excavation of Unsuitable Materials: When excavation has reached required subgrade elevations, notify ENGINEER to allow for an inspection of conditions. If unsuitable bearing materials are encountered, carry excavations deeper as directed by ENGINEER and replace excavated material with: $\frac{3}{4}$ " crushed stone.
- M. Material Storage: Stockpile and maintain suitable surplus excavated materials for re-use as backfill within the project limits, as directed by ENGINEER. Place, grade and shape stockpiles for proper drainage.

3.2 Stability of Excavations

- A. Slope sides of excavations to comply with OSHA Regulations and local codes. Shore and brace where sloping is not possible due to space restrictions or stability of material excavated. Maintain sides and slopes of excavation in safe condition until completion of backfilling.

3.3 Dewatering

- A. General: Perform all Work in the dry. Prevent surface water and subsurface or groundwater from flowing uncontrolled into excavations and resulting in the flooding of the Work and surrounding area.
- B. Do not allow water to accumulate in excavations. Provide and maintain all necessary pumps, hoses, pipes, well point dewatering system, and all other required components necessary to convey water away from excavations.
- C. Convey water removed from excavations and rain water to collecting or run-off areas. Establish and maintain temporary drainage ditches and other diversions outside excavation limits for each structure. Do not use trench excavations as temporary drainage ditches.
- D. Provide all necessary means to prevent erosion and sedimentation and the discharge of soil matter into a waterbody.

3.4 Backfill and Fill

- A. General: Place acceptable soil material in layers to required elevations as shown on the Drawings. Fill, backfill, and compact to produce minimum subsequent settlement of the material and provide adequate support for the surface treatment or structure to be placed on the material. Place material in approximately horizontal layers, beginning at lowest area to be filled. Do not impair drainage.
- B. Ground Surface Preparation: Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Scarify surfaces so that fill material will bond with existing surface.
- C. Placement: Place backfill and fill materials in layers not more than 12 inches in loose depth for material compacted by heavy compaction equipment, and not more than 6 inches in loose depth for material compacted by hand-operated tampers, unless otherwise indicated. Do not place backfill or fill material on surfaces that are wet, frozen, or contain frost or ice.
- D. Backfilling Pipe Trenches: Bed pipe in crushed stone. Maintain a minimum of 6 inches of material around piping to obtain an envelope unless otherwise indicated.

3.5 Compaction

- A. Methods: Use methods which produce the required degree of compaction throughout the entire depth of material without damaging material which has previously been placed.
- B. Degree of Compaction: Compact to the following minimum densities:

Area Classification	Density
Road Base and Subbase.....	95% of max.
Embankments (including slopes).....	92% of max.
Pipe Bedding.....	95% of max.
From invert to 1 foot above pipe.....	95% of max.
Beside Structure walls, manholes, retaining walls, tank walls, etc.(not below structures, embankments, paved areas, etc.)	92% of max.
Below structure floor slabs and footings.....	95% of max.

Maximum Density: ASTM D698 (Standard Proctor)
Field Density Tests: ASTM D2922

- C. Testing: See Soils Testing, Specification Section 01416. Costs for initial in-place tests shall be paid by OWNER, unless otherwise specified. Subsequent retests will be paid by CONTRACTOR. Perform additional Work to obtain proper compaction if in-place densities do not meet the specified densities.
- D. Minimum Number of Tests: SEE SECTION 01416

3.6 Grading

- A. Grading: Uniformly grade areas within limits of grading under this Section, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.
- B. Finish surfaces free from irregular surface changes and shall be finished to required elevation 0.1 feet in 5 feet.
- C. Compaction: After grading, compact subgrade surfaces to the percentage of maximum density for each area classification.

3.7 Maintenance

- A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.
- B. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction.

3.8 Disposal of Excess Materials

- A. Disposal of excess material shall be disposed of off-site in a lawful manner.
- B. Keep roads traveled by construction vehicles free of debris. Use suitable watertight vehicles for hauling wet materials over roads and streets. Clean up materials dropped from or spread by construction vehicles promptly or when directed by the ENGINEER.

END OF SECTION

SECTION 02210

SLOPE PROTECTION AND TEMPORARY EROSION CONTROL

PART 1 - GENERAL

1.1 Description of Work

- A. Provide and maintain devices to control erosion, siltation, sedimentation and dust that occurs during construction operations. Undertake every reasonable precaution and do whatever is necessary to avoid erosion of soil and to prevent silting of wetland areas, drainage ditches, and lakes.
- B. Provide measures to control dust caused whether on or off the Project site.
- C. Deficiencies in erosion control measures indicated by failures or erosion shall be immediately corrected by providing additional measures or different techniques to correct the situation and prevent subsequent erosion.
- D. Exposure of soils on embankments, excavations, and graded areas shall be kept as short as possible. Initiate seeding and other erosion control practices as soon as reasonably possible.
- E. Install erosion control measures in any ditch, swale or channel before water is allowed to flow in the waterway.
- F. Related Work Specified Elsewhere Includes: Division 2, Site Work, all sections.

1.2 Quality Assurance

- A. Conform to all requirements of applicable federal, state and local permits, and Contract Documents, and conform to the recommendations of the Erosion Control Handbook (see Part C below) whether the measures are specifically noted herein, or not.
- B. Meet with the ENGINEER to discuss erosion control requirements prior to the start of construction.
- C. Standards: "Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices" prepared by the Cumberland County Soil and Water Conservation District, dated March 1991, hereinafter referred to as Erosion Control Handbook.

1.3 Submittals

- A. Submit manufacturer's data for all materials to be incorporated into the work.

PART 2 - PRODUCTS

2.1 Materials

- A. Use the following materials to implement and construct erosion control measures. Other materials require approval of the ENGINEER.
 - 1. Siltation Fence: Mirafi Environfence, Amco 1380 Silt Stop, or Supac 3WS.
 - 2. Mulch: Type and use as specified by the Erosion Control Handbook.
 - a. Long fibered hay or straw in dry condition and which are relatively free of weeds and foreign matter detrimental to plant life.
 - b. Mulch Binder: An asphalt emulsion mulch binder of type acceptable to the ENGINEER.
 - c. Mulch Netting: Plastic or nylon mesh netting with approximate openings of 1/4" to 1"; or other netting approved by the ENGINEER.
 - 3. Temporary Erosion Control Matting: Type and use as specified by the Erosion Control Handbook.
 - a. Rolled matting blanket consisting of excelsior wood fiber, jute, straw, or paper bound with a weave of twisted craft paper, cotton cord or plastic mesh.
 - b. Provide staples for fastening matting to the ground. Staples shall be fabricated in a "U" shape from 11 gage or heavier stiff galvanized steel wire, 6 to 12 inches in length and 1 to 2 inches across.

4. Temporary Seed: Seed variety and applied rate are selected based upon the date of application, and as determined by the following table. Equivalent seed mixture based on its suitability for use in controlling erosion of the various soil types and slopes may be used as approved by the ENGINEER.

<u>DATES</u>	<u>SEED</u>	<u>APPLIED RATE</u>
4-1 to 7-1 8-15 to 9-15	Oats	1.8 lb/1000 ft ²
4-1 to 7-1	Annual Ryegrass	0.9 lb/1000 ft ²
5-15 to 8-15	Sudangrass	0.9 lb/1000 ft ²
9-15 to 10-15	Winter Rye	2.6 lb/1000 ft ²

5. Hay Bales: Rectangular shaped bales of hay or straw weighing at least 40 lbs/bale; free from noxious weed seeds and rough or woody materials.
6. Drains:
- Flexible drains consisting of collapsible neoprene pipe, minimum 8" diameter.
 - Corrugated metal pipe and inlet of a gauge consistent with the loading conditions, minimum 12" diameter.
7. Filter Fabric: Provide Mirafi 500X woven textile or equal.
8. Riprap: Sound, durable rock which will not disintegrate due to exposure to water or weather; angular in shape such as rough, unhewn quarry stone or fragments obtained by blasting, breaking or crushing natural rock. Rounded boulders or cobbles will not be permitted. Flat, platy stones and shale or slate rock with its largest length dimension three times greater than its shortest dimension will not be permitted.

Stone size will correspond to the inch dimension indicated on Drawings. The D_{50} of the stone size represent 50% of the stone passing the D_{50} dimension sieve screen. The D_{20} stone size, (20% passing) shall be one half the D_{50} dimension. The maximum size limit, D_{100} , shall be twice the D_{50} stone size dimension.

D_{20}	=	20% passing $\frac{1}{2}$ D_{50} dimension sieve
D_{50}	=	50% passing D_{50} dimension sieve
D_{100}	=	100% passing $2D_{50}$ dimension sieve

PART 3 - EXECUTION

3.1 Construction

- A. Silt Fence:
- Install silt fence prior to any earthwork including grubbing.
 - Place where shown on Drawings or as directed by the ENGINEER. Install parallel to contours where possible, prior to site clearing and grading activities.
 - Bury lower edge of fabric at least 8" below ground surface to prevent underflow, as noted in the Erosion Control Handbook.
 - Curve ends of fence uphill to prevent flow around ends.
 - Inspect frequently; repair or replace any damaged sections.
 - Remove fence only when adequate grass catch has been established as determined by the ENGINEER.
- B. Mulch:
- Undertake immediately after each area has been properly prepared.
 - When seed for erosion control is sown prior to placing the mulch, place mulch on the seeded areas within 48 hours after seeding.
 - Apply mulch at 1.5 to 2.0 tons per acre. Mulch applied between the dates of December 1 through March 31 for winter stabilization shall be applied at 3.0 to 4.0 tons per acre.
 - Blowing chopped mulch will be permitted.
 - Hay mulch should cover the ground enough to shade it, but the mulch should not be so thick that a person standing cannot see ground through the mulch.
 - Remove matted mulch or bunches.

C. Temporary Erosion Control Matting:

1. Surface Preparation:

- a. Conform to grades and cross sections for slopes and ditches shown on the Drawings.
- b. Finish to a smooth and even condition with all debris, roots, stones, and lumps raked out and removed.
- c. Loosen soil surface to permit bedding of the matting.
- d. Unless otherwise directed, apply seed prior to placement.

2. Installation:

- a. Place strips lengthwise in the direction of the flow of water.
- b. Where strips are laid parallel or meet as in a tee, overlap at least 4".
- c. Overlap ends at least 6" in a shingle fashion.
- d. The up-slope end of each strip of the matting shall be turned down and buried to a depth of not less than 6" with the soil firmly tamped against it.
- e. The ENGINEER may require that any other edge exposed to more than normal flow of water be buried in a similar manner.
- f. Build check slots at right angles to the direction of the flow of water. Space so that one check slot or one end occurs within each 50 feet of slope length. Construct by placing a tight fold of the matting at least 6" vertically into the ground, and tamp the same as up-slope ends.
- g. Bury edges of matting around the edges of catch basins and other structures.
- h. When ordered; additional seed shall be spread over matting, particularly at those locations disturbed by building the slots. Matting shall then be pressed onto the ground with a light lawn roller or by other satisfactory means.
- i. Drive staples vertically into the ground flush with the surface.
- j. On slopes flatter than 4:1, space staples not more than 3 feet and one row, alternately space, down the center.
- k. On grades 4:1 or steeper, place staples in the same three rows, but spaced 2 feet apart.
- l. On all overlapping or butting edges, double the number of staples, with the spacing halved; all ends of the matting and all required check slots shall likewise have staples spaced every foot.

D. Temporary Seeding:

1. Seed with appropriate seeds and application rates from the table in paragraph 2.1.D of this Section. Seed shall be sown at the rate indicated, on the pure live seed basis.
2. Mulch areas where temporary seeding has been applied. Do not mulch seeded areas where matting will be immediately installed.
3. If temporary seeding does not achieve adequate growth by December 1, an additional layer of mulch shall be applied at that time.

E. Topsoil Storage:

1. Topsoil which is stockpiled on the site for use in loam applications shall be placed out of natural drainage ways, in piles not more than 8 feet in height, which have side slopes of 2:1 to 1.5:1.
2. A trench, depth as required, shall be constructed around the base of the pile to prevent eroding soil from washing into drainage ways.
3. Any topsoil piles which are to remain for a period of 1 month or more shall be covered with temporary seed and mulch immediately following stockpiling.

F. Hay Bales:

1. Place as ordered to provide for temporary control of erosion, and in ditches at 100-foot minimum intervals.
2. Install as directed by ENGINEER, and stake with required stakes.

H. Dust Control:

1. Utilize the application of sprinkled water to reduce the emission of airborne soil particulates from the Project site. Calcium chloride shall not be permitted for use, unless acceptable to ENGINEER.

I. Temporary Berms:

1. Construct temporary barriers along the toes of embankments using side drains as required.

J. Temporary Slope Drains:

1. Collapsible pipe with corrugated metal pipe inlet.

L. Other Temporary Measures:

1. Utilize other temporary erosion control measures as directed by the ENGINEER.
 2. Type and use shall be as specified in the Erosion Control Handbook.
- M. Riprap:
1. Subgrade Preparation: Grade and compact, where possible, areas to receive protection to a uniform slope. Allow for depth of protection stone layer.
 2. Filter Fabric Placement: Filter fabric may be used under the riprap in lieu of aggregates as shown on the Drawings. Filter fabric is to be placed in one continuous piece. Sew all seams as per manufacturer's recommendation.
 3. Riprap Placement: Place required riprap to full depth shown on Drawings measured perpendicular to the face of the slope to obtain a uniform appearance true to line and grade. Place larger stones at bottom of slope. Place stones in close contact, with interlocking of face stones and backing stones. Fill openings between stones with smaller rocks or coarse gravel.

3.2 Maintenance

- A. Inspect erosion control practices immediately after each rainfall and at least daily during prolonged rainfall or snowmelt for damage. Provide maintenance and make appropriate repairs or replacement at no additional cost to the OWNER, until Project acceptance or as required to comply with maintenance requirements if longer.
- B. Remove silt from silt fence when it has reached one foot above grade or prior to expected heavy runoff or siltation.
- C. Repair matting if any staples become loosened or raised, or if any matting becomes loose, torn, or undermined, make satisfactory repairs immediately.

3.3 Removal of Temporary Erosion Control

- A. Remove temporary materials and devices when permanent soil stabilization has been achieved. Re-use materials in good condition, if approved by the ENGINEER.
- B. Level and grade to the extent required to present a sightly appearance and to prevent any obstruction of the flow of water or any other interference with the operation of or access to the permanent works.
- C. Remove unsuitable materials from site and dispose of in a lawful manner.

END OF SECTION

SECTION 02510

BITUMINOUS PAVEMENT

PART 1 - GENERAL

1.1 Summary

- A. This work shall include furnishing all plant, labor, equipment and materials required to install Bituminous Pavement courses, including streets, sidewalks, driveways and bituminous curbing when required, as shown on the drawings and as specified herein.
- B. Related Sections:
 - 1. Aggregate Base.

1.2 References

- A. Standard Specifications For Highways and Bridges, Maine Department of Transportation (MDOT Specifications), Latest Edition. The Engineer reserves the right to waive or modify any requirements which do not substantially affect the quality of the finished product.

1.3 Submittals

- A. A certificate of compliance shall be furnished to the Engineer that the materials supplied comply with the specification requirements.
- B. Delivery slips shall be furnished with each load of mix delivered to the Project. Information shall include:
 - 1. Vehicle Identification
 - 2. Date
 - 3. Project
 - 4. Identification of Material
 - 5. Gross, Tare and Net Weights
 - 6. Signature of the Bituminous Pavement Producer

1.4 Quality Assurance

- A. Qualifications: Use only materials and equipment furnished by a bulk bituminous pavement producer regularly engaged in the production of hot mixed, hot laid bituminous pavement.

PART 2 - PRODUCTS

2.1 Materials

- A. Hot Bituminous Paving Mix - (See Part 4 and/or Drawings for locations and types of pavements).
 - 1. Binder Course - MDOT Grading B
 - 2. Surface Course - MDOT Grading C
 - 3. Shim Course - MDOT Grading E
- B. Asphalt Cement Type shall be:
 - 1. Grade AC-10
 - 2. Content as Percent of Mix shall be:
 - a. Grade "B" - 5.3% nominal asphalt content with allowable range of 4.8% to 6.0%.
 - b. Grade "C" - 6.0% nominal asphalt content with allowable range of 5.6% to 6.4%.
 - c. Grade "E" - 6.8% nominal asphalt content with allowable range of 6.6% to 7.2%.
- D. Tack Coat:
 - 1. Emulsified Type, Grade RS-1, CRS-1, HFMS-1, CSS-1, CSS-1h.

PART 3 - EXECUTION

3.1 Preparation

- A. Pavement Removal (As Applicable)

1. Exercise extreme care in the removal of pavement so that remaining pavement will not be unnecessarily disturbed or destroyed.
 2. Mechanically cut pavement to be removed in a straight line, unless otherwise approved by the Engineer.
 3. When removing pavement under the jurisdiction of the MDOT strictly adhere to all MDOT regulations controlling pavement openings.
- B. Preparation of Base:
1. Engineer shall be notified at least 48 hours prior to paving to allow for site inspection. No pavement shall be placed until the base is approved by the Engineer.
- C. Surface Preparation:
1. Tack Coat: Apply to contact surfaces of previously constructed bituminous pavement or portland cement concrete, and surfaces abutting or projecting into the bituminous pavement. Distribute at rate of 0.05 to 0.15 gallons per square yard of surface. The word "surfaces" as mentioned above means vertically cut or existing edges of pavement and/or horizontal surface edges where pavement overlap may occur (feathered edge).
 2. Overlay Over New or Existing Pavement:
 - a. Prior to placing the overlay, the foundation course shall be thoroughly cleaned of all foreign and objectionable material by the use of brooms or brushes, combined with washing with water if necessary.
 - b. A tack coat of emulsified asphalt, type RS-1 or HFMS-1, shall be applied to any existing old pavement prior to overlay and/or to any new pavement in place longer than 24 hours or that received traffic of any kind prior to next pavement lift. Application rate shall be approximately 0.02 gallons per square yard within the temperature range specified in MDOT Section 702.05.

3.2 Application

- A. Street, Driveway and Sidewalk Paving:
1. Place bituminous mixture on prepared surface. Minimum allowable temperature for placing is 225° F. Maximum shall be 325° F. Place by hand in areas inaccessible to paving machine and small areas. Place each course to required grade, cross-slope and compacted thickness.
 2. Bituminous pavement plant mix shall not be placed on a wet surface. The pavement shall be constructed only when the air temperature in the shade at the paving location is 40° F or above. Weather conditions shall be otherwise satisfactory for proper handling and finishing of the mixture.
 3. The mixture shall be laid upon the properly prepared base course, spread and struck off to the plan grade and elevation.
 4. Self-propelled bituminous pavers shall be used where possible to distribute the mixture over such partial width as may be practicable.
 5. Immediately after the bituminous mixture has been spread, struck off, and surface irregularities adjusted, it shall be thoroughly and uniformly compacted by rolling. The surface shall be rolled when the mixture is in the proper condition and when the rolling does not cause undue displacement, cracking or shoving. Any displacement occurring as the result of the reversing of the direction of a roller or from other causes, shall be corrected at once by the use of a rake or lutes and the addition of fresh mixture when required. Care shall be exercised in rolling not to displace the line and grade of the edge of the bituminous mixture.
 6. Any mixture that becomes loose and broken, mixed with dirt or is in any way defective, shall be removed and replaced with fresh, hot mixture which shall be compacted to conform to the surrounding area. Any area showing an excess of deficiency of bituminous material shall be removed and replaced.
 7. The finished surface will be tested using a ten (10) foot straight edge at selected locations. The variation of the surface from the testing edge of the straight edge between any two contacts with the surface shall at no point exceed 1/4". All lumps or depressions exceeding the specified tolerance shall be corrected by removing defective work and replacing it with new material as approved. Regardless of surface tolerances, pavement shall be sloped to allow positive drainage free from puddles.
 8. Specifications shall apply when applicable:
 - a. 401.07 Weather Limitations
 - b. 401.08 Bituminous Mixing Plant
 - c. 401.09 Hauling Equipment

- d. 401.10 Bituminous Pavers
- e. 401.11 Rollers
- f. 401.12 Conditioning of Existing Surface
- g. 401.14 Preparation of Aggregates
- h. 401.15 Mixing
- i. 401.16 Spreading and Finishing
- j. 401.17 Compaction
- k. 401.18 Joints
- l. 401.20 Surface Tolerances

3.3 Testing

- A. Testing in accordance with MDOT Division 400.
- B. Compaction: 93% using the Theoretical Maximum Density (TMD) for all machine placed courses.
- C. Take core samples daily and test.
- D. Fill all core holes with tack coat and mix.

3.4 Protection

- A. After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened to the extent that the pavement will not be damaged.

3.5 Temporary Paving

- A. Place temporary paving where required by the drawings, specifications, or MDOT Highway Opening Permits. In MDOT jurisdictional areas, temporary paving may be required within 48 hours of backfilling trenches or excavations.

END OF SECTION

SECTION 02724

UNDERDRAIN PIPE

PART 1 - GENERAL

1.1 Summary

- A. Work Included: Provide and install non-pressure pipe and fittings of the size(s) and type(s) and in the location(s) shown on the Drawings and as specified herein.
- B. Related Work Specified Elsewhere (When applicable): Excavation and Backfill, Dewatering, Pavement, Borrow and Bedding Material are specified in the appropriate Sections of this Division.

1.2 Quality Assurance

- A. Manufacturers:
 - 1. Doran-Maine, Inc.
 - 2. Aroosta Cast, Inc.
 - 3. Johns-Manville
 - 4. Armco
 - 5. Northeast Concrete Products
 - 6. Or equivalent.

1.3 Submittals to the Engineer

- A. Submit five (5) copies of shop drawings to the Engineer for approval at least thirty (30) days prior to incorporation into the work.
- B. Submit manufacturer's "Certification of Conformance" that pipe and fittings meet or exceed the requirements of these Specifications.
- C. Submit other documents as specified in the appropriate Sections of this Division.

1.4 Delivery, Storage and Handling

- A. Provide all labor necessary to assist the Engineer to inspect pipe, fittings, gaskets and other materials.
- B. Carefully inspect all materials at the time of delivery and just prior to installation.
- C. Carefully inspect all pipe and fittings for:
 - 1. Defects and damage.
 - 2. Deviations beyond allowable tolerances for joint dimensions.
 - 3. Debris and foreign matter.
- D. Examine area and structures to receive piping for:
 - 1. Defects such as weak structural components that adversely affect the execution and quality of work.
 - 2. Deviations beyond allowable tolerance for pipe clearances.
- E. All materials and methods not meeting the requirements of the Contract Documents will be rejected.
- F. Immediately remove all rejected materials from the Project site.
- G. Start work only when conditions are correct to the satisfaction of the Engineer.

PART 2 - PRODUCTS

2.1 Non-Perforated Pipe and Fittings

- A. Size 12" dia. to 30" dia. Inclusive.
 - 1. MDOT Option III (Limited to that listed below)
 - a. Polyvinylchloride Non-Pressure Pipe, ASSHTO M278.
 - b. Reinforced Concrete Pipe Class IV, ASSHTO M170.
 - c. Smooth lined Corrugated Aluminum Alloy Pipe.
 - d. Corrugated Polyethylene Non-Perforated Pipe, ASSHTO M294.
 - 2. Fittings and joints to be compatible with pipe.

- B. Size 4" dia. and 6" dia. Inclusive.
 - 1. PVC Schedule 40.
 - 2. ASTM D-2665.
 - 3. Fittings and joints to be compatible with pipe.

2.2 Perforated Pipe and Fittings (When Applicable)

- A. Size 4" dia. and 6" dia. Inclusive:
 - 1. MDOT, Type "B" meeting requirements of Section 605.
 - 2. Corrugated Polyethylene Drainage Tubing for underdrain. ASSHTO M-252.
 - 3. Coiled pipe shall not be used.

2.3 Bedding Requirements

- A. See Drawings for details.
- B. Granular material for underdrain Type "B" shall be free of organic material and shall meet the following gradation requirements:

<u>Sieve Designation</u>	<u>Percent By Weight Passing Square Mesh Sieves</u>
1"	95 - 100
1/2"	75 - 100
No. 4	50 - 100
No. 20	15 - 80
No. 50	0 - 15
No. 200	0 - 5

PART 3 - EXECUTION

3.1 Inspection

- A. Examine areas to receive piping for the following:
 - 1. Obstructions that adversely affect the installation and quality of the work.
 - 2. Deviations beyond allowable tolerances for clearances.
- B. Examine pipe and fittings before installation to assure no defective materials are incorporated. No single piece of pipe shall be laid unless it is generally straight.
- C. Remove and replace all defective materials at no additional cost to the Owner.
- D. Start work only when conditions are satisfactory.

3.2 Installation

- A. Install all pipe and fittings to the lines and grades shown on the Drawings and/or as approved by the Engineer.
- B. Begin laying pipe at the downstream end.
- C. During installation, close open ends of the pipe with temporary watertight plugs to prevent earth, water and other material from entering the pipe.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 Summary

- A. This work shall consist of furnishing and constructing all cast-in-place concrete as shown on the Drawings and as required to complete the work. This work includes all steel reinforcement, form work, anchor bolts, sleeves, insulation, vapor barriers, and any other accessories necessary to complete the work.

1.2 References

- A. All work shall comply with the applicable provisions of the following codes:
1. American Concrete Institute ACI-318-83 "Building Code Requirements for Reinforced Concrete".
 2. American Concrete Institute ACI-301-89 "Specifications for Structural Concrete for Buildings".
 3. Concrete-Reinforcing Steel Institute CRSI Handbook 1972.
 4. ASTM C94 Standard Specification For Ready-Mixed Concrete.

1.3 Submittals

- A. Contractor shall furnish six (6) copies of proposed mix design along with copies of previous test results. Indicate pounds of cement per cubic yard.
- B. The Contractor shall provide the Engineer with at least six (6) copies of shop drawings for all reinforcing steel and other accessories to be cast-in-place. Shop drawings shall be submitted at least 30 days in advance of concrete placement and shall be reviewed by the Engineer prior to placement.

1.4 Testing

- A. See Division 1, Section 01415 - Concrete Testing.
- B. Concrete not meeting standards implied in these specifications or as indicated on the Drawings shall be removed and replaced by the Contractor at his expense.

PART 2 - PRODUCTS

2.1 Concrete

- A. Cement
1. Cement shall be Portland Cement conforming to ASTM C-150 for Type I, II or III as specified. If not specified, Type II shall be used.
- B. Aggregates: Concrete aggregates shall conform to ASTM Specification C-33. All aggregates shall be free from frozen materials and other impurities.
1. Fine aggregate shall be clean sand free from clay, loam, and other deleterious substances and shall meet the following gradation:

<u>Sieve Designation</u>	<u>Percentage by Weight Passing Square Mesh Sieves</u>
3/8 inch	100
No. 4	95-100
No. 8	70- 95
No. 16	45- 80
No. 30	25- 55
No. 50	10- 30
No. 100	2- 10
No. 200	5 Maximum

2. Coarse aggregate shall be durable, clean, crushed stone or gravel-free from clay, loam and other deleterious substances and shall meet the following gradation:

Concrete	Sizes	2"	1-1/2"	1"	3/4"	1/2"
AA	3/4			100	90-100	45-80
A	1		100	95-100	70-95	25-60
B	1-1/2	100	95-100	60-85	35-70	15-45

C. Water

1. Water shall be clean and potable containing no deleterious impurities which may be harmful to concrete or accessories.

D. Admixtures

1. Synthetic Fibers: nylon fiber conforming to ASTM C-1116. Synthetic fibers shall be installed in all concrete slabs, exposed exterior concrete and special structures unless otherwise indicated.
2. Water Reducing Admixture: "Eucon 75" by The Euclid Chemical Company, "Pozzolith 200N" by Master Builders, or "Pastocrete 160" by Sika Chemical Corporation. The admixture shall conform to ASTM C494, Type F or G, and not contain more chloride ions than are present in municipal drinking water.
3. Water Reducing, Retarding Admixture: "Eucon Retarder-75" by The Euclid Chemical Company, "Pozzolith 100XR" by Master Builder, or "Plastiment" by Sika Chemical Corporation. The admixture shall conform to ASTM C494, Type D and not contain more chloride ions than are present in municipal drinking water.
4. High Range Water Reducing Admixture (Superplasticizer): "Eucon 37" by The Euclid Chemical Company or "Sikament" by Sika Chemical Corporation. The admixture shall conform to ASTM C494, Type F or G, and not contain more chloride ions than are present in municipal drinking water.
5. Non-Corrosive, Non-Chloride Accelerator: "Accelguard 80" by The Euclid Chemical Company, or approved equal. The admixture shall conform to ASTM C494, Type C or E, and not contain more chloride ions than are present in municipal drinking water. The admixture manufacturer must have long-term, non-corrosive test data from an independent testing laboratory (of at least a year's duration) using an acceptable accelerated corrosion test method such as that using electrical potential measures.
6. Air Entraining Admixture: Conform to ASTM C260.
7. Prohibited Admixture: Calcium chloride, thiocyanates or admixture containing more than 0.05% chloride ions are **not** permitted.
8. Certification: Written conformance to the above mentioned requirements and the chloride ion content of the admixture will be required from the admixture manufacturer prior to mix design review by the Engineer.

2.2 Steel

- A. Reinforcing steel shall conform to ASTM A-615 and be of an approved manufacturer. All bars shall be new, grade 60 and shall be at the sizes shown on the Drawings.
- B. Welded wire mesh or fabric (WWF) shall conform to ASTM A-185 and shall be at the sizes and dimensions as shown on the Drawings, and fabricated in accordance with ACI-315 (Latest).
- C. Steel accessories shall be at the sizes and types as shown on the Drawings unless otherwise specified and shall include all spacers, chairs, ties and other devices for properly spacing, supporting and fastening reinforcement in place. Anchor bolts shall be Grade 60 or better and of the sizes and types as shown on the Drawings.
- D. Wall reinforcement in 8-inch walls shall be #4 bars at 18" intervals, both horizontally and vertically unless otherwise indicated on drawings.

2.3 Accessories

- A. Waterstops shall be neoprene, PVC, or other approved material of the size and style as shown on the drawings.

- B. Insulation and Vapor Barriers:
 - 1. Rigid insulation shall be plastic foam insulation such as "Styrofoam Brand SM" or approved equivalent.
 - 2. Vapor barriers shall be "Tu-Tuff 4" high density cross laminated polysheeting manufactured by Sto-Cote Products, Inc. or approved equivalent.
- C. Preformed joint fillers shall be 1/4-inch fiber insulation board such as "Celotex" or approved equivalent.
- D. Non-shrink Grout shall be portland cement based, non-metallic, as manufactured by U. S. Grout Corporation - "Five Star Grout"; Dayton Superior Corporation - "Sure-Grip Utility Grout"; or approved equivalent. Non-shrink grout shall conform to ASTM C-827.
- E. Asphalt dampproofing shall be a heavy-bodied bituminous compound as manufactured by the Euclid Chemical Company or approved equivalent.
- F. Concrete Sealers (Exterior concrete): Water repellent concrete sealer shall be single component, colorless liquid, "Sikagard 70" by the Sika Chemical Corporation, "Euco-Guard" by the Euclid Chemical Company, or approved equivalents.
- G. Concrete Hardeners/Sealer (Interior concrete): Resin-based hardening compounds for concrete shall cure, seal, harden and dustproof concrete slabs; "Euco Super Floor Coat" by the Euclid Chemical Corporation, "Sikagard Cure/Hard" by the Sika Chemical Corporation, or approved equivalents.

2.4 Joint Sealants

- A. Epoxy jointing compounds shall be two component, 100% solids, moisture insensitive, with a minimum shore A hardness of 75; "Euco 700" by the Euclid Chemical Company; "Sikadur 51 SL" by the Sika Chemical Corporation, or approved equivalents.
- B. Polyurethane-based sealants shall be one component, premium grade, non-sag elastomeric sealant; "Eucolastic I" by the Euclid Chemical Company; "Sikaflex - 1a" by the Sika Chemical Company, or approved equivalents.

PART 3 - EXECUTION

3.1 Concrete Proportioning

- A. Concrete shall be Ready-Mix conforming to ACI-301-72 Para. 7.1. B. Strength, cement and water requirements:

Use	Min.Strength 28-day-psi	Max.Size Coarse Agg	% Air (±1%)	Min-Max Slump	Min Cem.Fac.	Max W/C	Fiber Reinf
Slabs	4,000	1"	6	2-4	611 #/CY	.45	1-1/2# /CY*
Footings, Walls,	4,000	1"	6	2-4	611 #/CY	.45	-----**
Misc. Fill Conc.	3,000	1"	6	2-5	564 #/CY	.50	-----

*Required in all slabs, unless otherwise specified.

**All concrete shall contain a high range, water-reducing admixture meeting the requirements of 2.1.D. Air content shall be 5-7½% and maximum slump shall be 7" after mixing.

3.2 Form Work

- A. All construction form work shall be of sufficient strength and construction to safely withstand the loads imposed, conforming to ACI 347. Forms shall be suitably tied and/or bolted together to maintain the specified dimensions. 3/4-inch chamfer strips shall be placed at all exposed corners unless otherwise specified.

- B. Materials - Forms shall be smooth, treated plywood or steel. Forms shall be coated with form oil, water or other approved substances to facilitate removal. Only non-staining substances shall be used. Form oil shall not be used on corners which will be waterproofed. Where concrete structures will contact potable water, provide only new, clean form panels. Form release agents shall be approved for use with potable water structures.
- C. Build into the forms all collars, sleeves or thimbles required for piping and wiring, and any anchors or inserts for supporting piping, fixtures or attachments; nailing blocks and strips, and all other items required in the Specifications or shown on the Drawings. Inserts supporting a mechanical or electrical fixture shall be furnished and located by the trade who will use them.
- D. Form Removal - Forms shall be left in place at least 5 days unless otherwise allowed by the Engineer. Forms for elevated slabs and beams shall be left in place and supported until concrete attains at least 80% of specified strength. Loads shall not be superimposed until allowed by the Engineer. Care shall be taken in removing forms so as not to damage the concrete.
- E. Form Ties - Unless otherwise specified, form ties shall be snap-off type. For watertight construction as shown on the Drawings or as approved by the Engineer, form ties shall be snap-off type with 2-inch or 1-inch cones.

3.3 Placing Reinforcing Steel

- A. All steel shall be supplied and placed in accordance with ACI-318 and shall conform to the sizes, lengths and shapes as shown on the approved shop drawings.
- B. The bending of reinforcing to conform to the dimensions shown on the plans shall be accurately done. Heating of bar to facilitate bending is not allowed.
- C. Place reinforcing of all slabs in correct position as shown and hold in position with pre-cast blocks, polyethylene chairs, or other approved means.
- D. Minimum clearance between steel and form shall be 2 inches and steel and ground shall be three inches except as otherwise specified.
- E. Reinforcing steel shall be inspected and approved by the Engineer prior to placing concrete. At least 24 hours notice shall be given the Engineer to inspect all steel.
- F. Furnish and place all embedded items as shown on the Drawings and as otherwise required such as anchor bolts, frames, sleeves, etc.
- G. Provide adequate keys and dowels at all wall intersections and construction joints. Lap all reinforcements 36 bar diameters at splices, and 12 inches minimum at corners unless otherwise indicated on Drawings.
- H. Provide dowels in wall footings equivalent in size and number to vertical steel extending 24 bar diameters into footing and into wall unless otherwise indicated on Drawings or by the Engineer.
- I. Lower end of dowels shall have a 90-degree bend with a 4-inch minimum horizontal dimension.
- J. All 4-inch thick concrete slabs on fill shall be reinforced with 6" x 6" x W2.9 x W2.9 WWF unless otherwise indicated on Drawings or by the Engineer.

3.4 Joints

- A. Control joints shall be located where shown on the Drawings or at no more than 15-foot intervals. Saw cut at joints shall be made within 48 hours of concrete pour.
- B. Construction joints shall be used only where approved by the Engineer.
- C. Expansion joints shall be located where shown on the Drawings. Preformed joint fillers shall be placed in all expansion joints to within 1/4 inch of surface.
- D. Epoxy joint filler shall be installed as approved by the manufacturer in all horizontal, vertical and overhead control and construction joints not in contact with water or earth backfill, unless otherwise shown on the Drawings.
- E. Polyurethane-based elastomeric sealants shall be installed over the preformed joint filler in all expansion joints.

3.5 Moisture Barrier

- A. Place barrier over aggregate in largest practical sizes to have as few joints as possible. Laps shall be 6" minimum in direction of the pour. Lap barrier up the wall the thickness of the slab

and seal to wall with mastic. Care shall be taken not to unnecessarily puncture barrier. Place 3" of sand over vapor barrier for protection.

3.6 Mixing and Placing Concrete

- A. Transit Mix - Concrete mixed in transit mixers shall be placed within 90 minutes of addition of water at the plant. Delivery tickets shall state the time of water addition or departure from the plant if this is within 10 minutes. If the concrete cannot be placed within the specified time limitations, the Engineer may require that all cement be added at the job site. No additional water shall be added without consulting the Engineer. Any additional water added to the concrete on the site is the Contractor's sole responsibility and risk.
- B. Placement - Concrete shall be placed with a minimum amount of handling to prevent segregation. Chutes and troughs shall be provided where required. Vertical drops over 8 feet will not be permitted without the use of a tremie or similar approved equipment. All placement shall be subject to the approval of the Engineer.
- C. Vibration - Power vibrators shall be provided to thoroughly consolidate and compact the concrete. Vibrators shall not be used to push or move concrete laterally in forms. Excessive vibration will not be permitted. A minimum of two (2) power vibrators shall be on the site when pouring concrete.

3.7 Protection of Concrete

- A. Fresh concrete shall be protected from rain, cold and excessive temperature. Concrete shall be placed at temperatures between 40°F and 90°F. When outside air temperatures are below 40°F, materials shall be heated and maintained above 50°F for at least 5 days after placement.
- B. Curing - Exposed concrete shall be kept continuously moist for at least 7 days after placement. In hot weather, slabs and other exposed concrete shall be covered with burlap, plastic sheeting or other approved materials and be sprinkled as required to prevent rapid drying. Curing compounds may be approved by the Engineer.

3.8 Finishing

- A. Exposed Concrete (Except Slabs)
 - 1. After removal of forms, remove all form ties to at least 1-inch below surface. Remove all loose and honeycombed concrete, fins and other surface irregularities.
 - 2. Concrete patching - After cleaning out all holes, honeycombs and other areas to be patched, moisten surface and apply non-shrink grout or a mixture of one part Portland Cement and 3 parts sand, taking care to match the color of concrete.
 - 3. All concrete, which will be exposed to view, shall be hand rubbed using carborundum bricks, burlap or other approved method. Finished surfaces should present a smooth, even appearance of uniform color.
- B. Unexposed Concrete
 - 1. All unexposed concrete shall have tie holes, honeycombs and other holes filled with patching mortar as above. Fins and other irregularities shall be removed so as to present a uniform surface.
 - 2. Unexposed concrete will not require a rubbed finish after patching.
 - 3. Concrete walls that are in contact with earth backfill shall receive two coats of bituminous asphalt dampproofing unless otherwise shown on the Drawings.
- C. Slabs
 - 1. Interior Floor Slabs shall be float finished and steel trowelled with a trowelling machine once the concrete has set sufficiently. The finish shall be smooth, uniform and hard. Surface tolerance shall be not more than 1/4-inch under a 10-foot straight edge. Slabs in areas where floor drains occur shall be pitched to drains with a uniform gradual pitch in all directions. Floor slabs shall be covered and sealed with polyethylene sheeting and burlap or other approved material and cured for not less than 7 days. Treat floor slabs with approved surface hardener/sealer according to manufacturer's directions. Treat floor slabs in garages and other commercial or industrial areas with approved surface hardener/sealer according to manufacturer's directions.

2. Exterior Floor Slabs/Pavements shall be float finished and receive a moderate broom finish perpendicular to the direction of traffic. Floor slabs shall be covered and sealed with polyethylene sheeting and burlap or other approved material and cured for not less than 7 days. Apply approved sealer according to manufacturer's directions.
- D. Penetrations
1. All wall or floor slab penetrations by pipes, conduit and other inserts shall be sealed with non-shrink grout around entire penetration to provide a watertight finish.
- E. Potable Water Structures
1. Thoroughly clean and disinfect all such structures or concrete which may contact potable water in accordance with AWWA C-652, "Disinfection of Water Storage Facilities." Dechlorinate and dispose of all chlorinated water in compliance with applicable regulations, by sulphonation or other approved means.

END OF SECTION

SECTION 06100

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 Summary

- A. This work consists of all labor, materials and equipment necessary to complete the work as shown on the Drawings and as specified herein.

1.2 References

- A. BOCA National Building Code, Latest Edition.

1.3 Workmanship

- A. Only experienced personnel shall be engaged in this work.

1.4 Delivery, Storage and Handling

- A. Deliver the materials to the job site and store in a safe area, out of the way of traffic, shored up off the ground surface and covered to protect from the weather.

PART 2 - PRODUCTS

2.1 Dimension Lumber

- A. Dimension lumber shall be Eastern Spruce or other wood approved by the Engineer and shall comply with grading requirements of the Northeastern Lumber Manufacturers Association for Common, Number 2 or better, and shall bear the grade stamp.
- B. When specified on the Plans or in Part 4, stress grade structural lumber shall be provided. Stress grade lumber shall bear appropriate stamp for the specified grade and species.
- C. Wood for pressure treating and special installation shall be southern yellow pine meeting the requirements of the Southern Pine Inspection Bureau (SPIB) for Number 2 or better.
- D. All lumber shall not exceed 19% moisture content.

2.2 Plywood

- A. All plywood shall be 4/5-ply minimum and shall comply with U.S. Product Standard PS-1 for softwood plywood and shall bear the specified grade and stamp of the American Plywood Association.
- B. Unless otherwise shown on the Drawings, plywood shall meet the following requirements:

<u>Use</u>	<u>Thickness</u>	<u>Grade</u>	<u>Glue</u>	<u>Span Rating</u>
Wall Sheathing	5/8"	CDX	Exterior	32/16
Interior Sheathing	3/4"	AC, AD	Interior	-----
Electrical Backboard	3/4"	BC	Exterior	-----

- C. Contractor may substitute oriented strand board (OSB) sheathing in lieu of exterior wall sheathing, equivalent to "Advantek" by Huber Industries.

2.3 Accessories

- A. Nails shall be new, bright, common nails of appropriate lengths and sizes to adequately join the wood. Use galvanized where exposed to weather or where shown on the Drawings.
- B. Joist hangers, framing anchors shall be 18-gauge, galvanized steel such as manufactured by Kant Sag, Simpson, or approved equivalent.

- C. Special nails shall be used where shown on the Drawings or as recommended by manufacturer.
- D. Glue shall be an all purpose subfloor and construction adhesive, suitable for interior and exterior use, as manufactured by DAP, GE, Ohio Sealants, or approved equivalents.

2.4 Pressure Treated Lumber (P.T.)

- A. Lumber or plywood in contact with ground or fresh water shall be treated in accordance with AWWA Standards C2 and LP-22 and shall be rated 0.60 retention.
- B. Lumber in direct contact with concrete, masonry, or steel, not in contact with soil or fresh water shall be treated in accordance with AWWA Standards C2 and LP-2 and shall be rated 0.40 retention.
- C. Pressure treatment shall be water borne chromate copper arsenate (CCA).
- D. Wood shall be dried after treatment.

PART 3 - EXECUTION

3.1 Preparation

- A. Carefully select individual lumber pieces so that knots and obvious defects will not interfere with placing bolts or proper nailing.
- B. Cut out and discard defects which render a piece unable to serve its intended function.
- C. Lumber will be rejected by the Engineer if it is excessively warped, twisted, bowed, mildewed or molded, as well as if it is improperly installed.

3.2 Erection

- A. All framing work shall produce joints which are tight, true, and well nailed, with members assembled in accordance with the Drawings and with pertinent codes and regulations.
- B. All framing and fastening shall equal or exceed HUD Minimum Property Standards, Manual of Accepted Practices and the requirements of the BOCA National Building Code.
- C. Do not shim any framing member.
- D. Install horizontal and sloped members with crown up.
- E. Do not notch, cut or bore members for pipes, ducts, conduits, or for any other reason, except as shown on the Drawings and as approved by the Engineer.
- F. Bearing surfaces on which structural members rest shall provide a full, even support.
- G. Joists, rafters and similar members shall be fastened with at least two (2) galvanized steel hangers or anchors and nailed completely.
- H. Install solid block bridging at midpoint of joists or as shown on the Drawings.
- I. Provide all shims, blocking and bracing as shown on the Drawings and as approved by the Engineer to complete the work.
- J. In addition to normal framing operations, install wood blocking or backing required to support the work of other trades.

3.3 Plywood Sheathing

- A. Unless otherwise specified or approved by the Engineer, install plywood with the face grain perpendicular to framing and center joints over supports. Leave a 1/16-inch gap where adjacent plywood panels meet.
- B. Stagger plywood joints so that all joints do not lie on the same support. Nail as shown in the recommended fastening schedule in this Section.
- C. On roofs, install metal plywood H-clips in joints between supports.
- D. On floors, plywood shall be glued at all supports and nailed as shown in the recommended fastening schedule in this Section.

3.4 Nailing

- A. Use common wire nails except as otherwise indicated. Make tight connections between members. Countersink nail heads on exposed carpentry work and fill holes.
- B. Install fasteners without splitting wood; pre-drill as required.
- C. All nailing shall comply with the BOCA National Building Code, Recommended Fastening Schedule (included in this Section), unless special requirements are shown on the Drawings.

3.5 Concrete Bearing

- A. All wood which bears against concrete, earth, steel or masonry shall be pressure treated as specified on the Drawings or as approved by the Engineer.

PART 4 - SUPPLEMENTAL SPECIFICATIONS

4.1 Recommended Fastening Schedule (Based on BOCA National Building Code, 1993)

<u>Building Element</u>	<u>Nail Size & Type</u>	<u>Number & Location</u>
Stud to sole plate	8d common 16d common	4 toe nail or 2 direct nail
Stud to cap plate	16d common	2 toe nail or 2 direct nail
Double studs	10d common	12" o.c. direct
Corner studs	16d common	24" o.c. direct
Sole plate to joist or blocking	16d common	16" o.c.
Double cap plate	10d common	16" o.c. direct nail
Cap plate laps	10d common	2 direct nail
Ribbon strip, 6" or less	10d common	2 each direct bearing
Ribbon strip, 6" or more	10d common	3 each direct bearing
Roof rafter to plate	8d common	3 toe nail
Roof rafter to ridge	16d common	2 toe nail or direct nail
Jack rafter to hip	10d common	3 toe nail or
	16d common	2 direct nail
Floor joists to studs	10d common	5 direct or
(no ceiling joists)	10d common	3 direct
Floor joists to studs	10d common	2 direct
(with ceiling joists)		
Floor joists to sill or girder	8d common	3 toe nail
Ledger strip	16d common	4 each direct joist
Ceiling joists to plate	16d common	3 toe nail
Ceiling joists	10d common	3 direct nail
(laps over partition)		
Ceiling joists	10d common	3 direct nail
(parallel to rafter)		
Collar beam	10d common	3 direct
Bridging to joists	8d common	2 each direct end
Diagonal brace (to stud & plate)	8d common	2 each direct bearing
Tail beams to headers	20d common	1 each end 4 sq.ft. floor area
(when nailing permitted)		
Header beams to trimmers	20d common	1 each end 8 sq.ft. floor area
(when nailing permitted)		
1" roof decking	8d common	2 each direct rafter
(6" or less in width)		
1" roof decking	8d common	3 each direct rafter
(over 6" in width)		
1" subflooring (6" or less)	8d common	2 each direct joist
1" subflooring (8" or more)	8d common	3 each direct joist
2" subflooring	16d common	2 each direct joist
1" wall sheathing	8d common	2 each direct stud
(8" or less in width)		
1" wall sheathing	8d common	3 each direct stud
(over 8" in width)		
Plywood roof and wall sheathing	6d common	6" o.c. direct edges and
(1/2" or less)		6" o.c. intermediate
(5/8" or greater)	8d common	6" o.c. direct edges and
Plywood Subflooring:		
(1/2")	6d common or 6d annular or spiral thread	6" o.c. direct edges and 10" o.c. intermediate

(5/8", 3/4")	8d common or 6d annular or spiral thread	6" o.c. direct edges and 10" o.c. intermediate
(1", 1-1/8")	10d common or 8d ring shank or 8d annular or spiral thread	6" o.c. direct edges and 6" o.c. intermediate
Built-up girders and beams	20d common	32" o.c. direct
Continuous header to stud	8d common	4 toe nail
Continuous header, two pieces	16d common	16" o.c. direct
1/2" fiber board sheathing	1-1/2" galvanized roofing nail or 6d common nail	3" o.c. exterior edge, 6" o.c. intermediate
25/32" fiber board sheathing	1-3/4" galvanized roofing nail or 8d common nail	3" o.c. exterior edge, 6" o.c. intermediate
Gypsum sheathing	12 gage 1-1/4" large head corrosion resistive	4" o.c. on edge, 8" o.c. intermediate
Shingles, wood*	No. 14 B&S Gage corrosion resistive	2 each bearing
Weather boarding	8d corrosion resistive	2 each bearing

*Shingle nails shall penetrate not less than 3/4 inch into nailing strips, sheathing or supporting construction except as otherwise provided in Sections 2104.4 and 2305.1 of the BOCA Code.

END OF SECTION

SECTION 06192

STRUCTURAL GLUE LAMINATED TIMBER

PART 1 - GENERAL

1.1 Summary

- A. Work Included: Provide wood arches where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
- B. Related Work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Section 06100 - Rough Carpentry.

1.2 Quality Assurance

- A. Laminated wood arches fabrication and installation shall comply with the requirements and recommendations of the American Institute of Timber Construction.
- C. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.3 Submittals

- A. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 - 3. Shop Drawings showing species, sizes, and stress grades of lumber proposed to be used; pitch, span, camber configuration, and spacing; connector type, thickness, size, location, and design value; and bearing details.
 - 4. Submit six (6) copies of shop drawings showing types and sizes of metal tie down anchors and any other accessories.
 - 5. These submittals shall be provided on Shop Drawings signed and stamped by an engineer licensed to practice in the State of Maine.

1.4 Delivery Storage and Handling

- A. Handle and store arches with care and in accordance with manufacturer's instructions and AITC recommendations.
- B. Time delivery and erection of structural glue laminated timbers to avoid extended on-site storage.

PART 2 - PRODUCTS

2.1 Structural Glue Laminated Wood Arches

- A. Design Criteria:
 - 1. BOCA National Building Code 1999, 100 psf ground snow load, 90mph wind load, exposure factor 1.0, thermal factor adjusted for roof slope on a cold metal roof, importance factor 0.8.
 - 2. Combination Symbol 24F-V5.
 - 3. Industrial grade, wet use conditions.
- B. Fabrication:
 - 1. Cut members to accurate lengths, angles and sizes to produce close fitting joints with proper wood-to-wood bearing in assembled units.

2. Connect members by means of metal connector plates accurately located and securely fastened to foundation.

2.2 Sealer

- A. Provide manufacturer's standard, transparent clear sealer to seal the entire member, including ends.

2.3 Permanent Bracing

- A. Provide 2" x 8" diagonal bracing of arch members and continuous lateral bracing as shown on the Drawings and as approved by the Engineer.

2.4 Other Materials

- A. Provide other materials, not specifically described but required for a complete and proper installation, subject to the approval of the Engineer.

2.5 Metal Tie Down Anchors

- A. Provide metal tie down anchors that are bolted to the arch bottom and foundation wall as shown on the drawings. All connectors shall be hot dipped galvanized.

PART 3 - EXECUTION

3.1 Surface Conditions

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.2 Installation

- A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.
- B. Install the work of this Section in strict accordance with the original design, the approved Shop Drawings, and recommendations of the manufacturer as approved by the Engineer, anchoring all components firmly into position.
 1. Hoist the arches into position with proper bracing secured at designated lifting points.
 2. Exercise care to keep bending of arches to a minimum.
 3. Install temporary horizontal and cross bracing to hold arches plumb and in safe condition until permanent bracing is installed.
 4. Install permanent bracing and related components prior to application of loads.
 5. Anchor securely at all bearing points and install metal tie down anchors as shown on the Drawings.
 6. Restrict construction loads to prevent overstressing of members.
 7. Do not cut members except as approved by manufacturer.

END OF SECTION

SECTION 07467

METAL SIDING

PART 1 - GENERAL

1.1 Summary

- A. Work Included: Provide preformed metal siding and roofing where shown on the Drawings, as specified herein and as needed for a complete and proper installation.
- B. Related Work: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions and Sections in Division 1 of these Specifications.

1.2 Quality Assurance

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.3 Submittals

- A. Comply with pertinent provisions of Section 01340.
- B. Product Data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section;
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements;
 - 3. Shop drawings in sufficient detail to show fabrication, installation, anchorage and interface of the work of this Section with the work of adjacent trades;
 - 4. Samples:
 - a. Two (2) full panel width by 6" length of finished exterior siding, interior liner and perimeter trim pieces.
 - b. One of each type fastener employed;
 - 5. Manufacturer's recommended installation procedures which, when approved by the Engineer, will become the basis for accepting or rejecting actual installation procedures used on the work.

PART 2 - PRODUCTS

2.1 Preformed Metal Siding and Roofing

- A. Metal siding shall be 26 gauge corrugated steel with 7/8" high flutes, galvalume substrate with a Kynar 500 finish.
- B. Metal siding shall be equivalent to McElroy Metal Multi-Cor.
- C. Panels shall be maximum length possible to minimize end laps.
- D. Siding color shall be selected by the Owner.

2.3 Accessory Items

- A. Provide subgirts, perimeter trim, closures and other required components as needed to comprise the complete preformed metal siding system, using the materials and gauges recommended by the manufacturer and approved by the Engineer, and providing finish on exposed surfaces precisely matching the finish on the other exposed surfaces. Final color to be decided by the Engineer.
- B. Provide fasteners, washers and sealants as recommended by the manufacturer.

PART 3 - EXECUTION

3.1 Surface Conditions

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions

detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.2 Installation

- A. Install the work of this Section in strict accordance with the manufacturer's recommended installation procedures as approved by the Engineer.
- B. Set siding plumb, level and true to line, without warp or rack, to a tolerance of one in 600.
- E. Touch up mars, scratches and cut edges to match original finish.
- F. Provide additional panels in the amount of 10% of the total job quantity for the Owner's future use.

END OF SECTION

SECTION 07610

METAL ROOFING

PART 1 - GENERAL

1.1 Summary

- A. Work Included: Install corrugated metal roofing complete with all fasteners and accessories for a watertight system.
- B. Related Sections: Rough Carpentry, Wood Trusses, Building Insulation.

1.2 Quality Assurance

- A. Contractor shall be approved in writing by the roofing manufacturer and shall substantiate a minimum of three (3) years experience installing standing seam roofing.

1.3 Submittals

- A. Submit six (6) copies of shop drawings to Engineer for review at least thirty (30) days prior to incorporation into the work. Shop drawings shall be approved and assigned a number by the manufacturer.
- B. Shop drawings shall include: Outline of roof and roof size, location and types of penetrations, perimeter details, penetration details, and all manufacturers data on the proposed materials including panels, anchor clips and fasteners.
- C. Submit written approval of contractor by manufacturer.
- D. Submit sample warranty and maintenance instructions.
- E. Submit structural uniform load capacity data for conditions of the gauge and span, in accordance with the load conditions indicated on the Drawings.

1.4 Warranty

- A. Provide manufacturer's written twenty (20) year warranty for weather-tightness against leaks in roof panels caused by ordinary wear and tear under normal weather conditions.
- B. Roof finish coating shall be warranted against rust, peeling, chipping, cracking, and blistering for a period of twenty (20) years.
- C. Contractor shall provide written two-year warranty, guaranteeing the roof system to be watertight and free of defects.
- D. Contractor shall provide detailed instructions for preventative maintenance and noting a list of harmful substances that may damage roofing.

PART 2 - PRODUCTS

2.1 Roof Panels

- A. Roof panels shall be 29 gauge galvanized steel and factory coated with a Kynar 500 finish.
- B. Panels shall be corrugated, 24" wide maximum with 7/8" high flutes.
- C. Metal roofing shall be equivalent to McElroy Metal Multi-Cor.
- D. Panels shall be maximum possible lengths to minimize end laps.
- E. Roof panel color shall be selected by Owner.

2.2 Fasteners

- A. Fasteners shall be exposed.
- B. Exposed fasteners shall be fitted with EPDM Weatherseal washers and shall be prefinished to match.

2.3 Flashing

- A. Flashing shall be 26 gauge galvanized steel.

2.4 Sealants

- A. Sealants between roof panels shall be as recommended by the manufacturer.
- B. Provide all required sealants at trim, roof penetration, etc.
- C. Sealants shall be non-drying elastomer based material.

2.5 Fascia, Trim and Accessories

- A. Fascia and metal trim shall be prefinished .032 aluminum or 26 gauge galvanized steel. Color shall be chosen by the Owner.
- B. Soffit shall be .032 aluminum or 26 gauge galvanized steel perforated panels. Color selected by Owner.

PART 3 - EXECUTION

3.1 Inspection

- A. Contractor shall inspect the substrate prior to installing metal roofing to insure that the surface is sound and uniform. Correct any irregularities prior to proceeding with the work.

3.2 Installation

- A. Fasten metal panels to structural substrate with exposed fasteners with neoprene washers.
- B. Install accessories such as penetration flashings and eave closures in accordance with manufacturer's recommendations, as approved by the Engineer.

3.3 Final Inspection

- A. A final inspection of the roofing system shall be made by a qualified representative of the roofing manufacturer as soon as construction is complete.

END OF SECTION

SECTION 07920

SEALANTS AND CAULKING

PART 1 - GENERAL

1.1 Summary

- A. Provide all labor, materials and equipment to complete sealing and caulking as shown on the drawings and as specified herein.

1.2 Scope of Work

- A. Sealing and caulking shall be performed on all exterior joints including but not limited to:
 - 1. Around door, frames and windows.
 - 2. Joints around wall, ceiling and penetrations such as electrical boxes, pipes, etc.
 - 3. Joints between dissimilar building materials such as brick and wood, wood and metal, etc., where water might enter.
- B. Interior caulking of all wall, floor, and ceiling penetrations.
- C. Sealing of concrete joints is covered in Section 03300.

1.3 References

- A. All sealants and caulking shall comply with ASTM C920, Standard Specification for elastomeric joint sealants.

PART 2 - PRODUCTS

2.1 Exterior Caulking

- A. Exterior caulking between prefinished surfaces shall be a one component silicone joint sealant; "Spectrum 1" by Tremco Sealant Systems, Dow Corning "795 Silicone Building Sealant", or approved equivalent.
- B. Exterior caulking for use on paintable surfaces shall be an acrylic latex joint sealant; "Tremco Acrylic Latex Caulk"; Bostik "Chem-Caulk 600", or approved equivalents.

2.2 Interior Caulking

- A. Interior caulking for bedding electrical boxes, outlets, pipes or other wall penetrations and around interior doors, frames and windows shall be a non-hardening sealant; "Tremco Acoustical Sealant"; Bostik "Chem-Caulk 600", or approved equivalents.
- B. Interior caulking for penetrations through fire walls or smoke barriers such as conduits, pipes and ducts shall be a one component fire resistant caulk or putty; 3M Fire Barrier Caulk "CP25" or Putty "303", or approved equivalents.

2.3 Joint Filler

- A. Joint filler for backing caulking shall be non-absorbent precompressed foam sealant; "Will-Seal 150", by Will-Seal Construction Foams; "York-Seal 100" by York Manufacturing, Inc., or approved equivalents.

PART 3 - EXECUTION

3.1 Preparation

- A. All joints and spaces to be caulked shall be dry, clean and free from dust and loose materials.
- B. If necessary mask or otherwise protect adjacent surfaces.

3.2 Installation

- A. All sealants and caulking shall be installed according to the manufacturer's recommendations.
- B. Caulking shall be applied with suitable equipment such as with a caulking gun.
- C. Use foam backing for joints deeper than 1/2-inch. Pack into joint allowing at least 1/4-inch for caulking.
- D. Caulking shall be applied so that surfaces are slightly concave, tight and smooth. Joints shall be air and water tight.
- E. Caulk or putty around fire and smoke wall penetrations shall be applied so as to provide a complete fire barrier sealing system.
- F. Remove excess caulking and clean adjacent surfaces with approved cleaners.

END OF SECTION

SECTION 08250

DOORS, FRAMES AND HARDWARE

PART 1 - GENERAL

1.1 Summary

- A. This work shall include all labor, materials and equipment necessary to complete the work as shown on the drawings and as specified herein.

1.2 Submittals

- A. Contractor shall submit six (6) copies of shop drawings to the Engineer 30 days prior to installation. Only doors for which there are reviewed shop drawings shall be incorporated into the work.

1.3 Quality Assurance

- A. Only experienced skilled workmen shall be engaged in this work.

1.4 Delivery Storage and Handling

- A. Deliver doors and all necessary equipment in manufacturer's unopened containers.
- B. Store materials in a protected area to prevent damage.
- C. Protect doors and equipment during and after installation from splashing or the accumulation of paint, concrete, mortar, or other foreign material.

PART 2 - PRODUCTS

2.1 Acceptable Manufacturers

- A. Therma-Tru Smooth Star flush panel fiberglass door
- B. Sargent Lock Co. 10 line Series Bored Locks
- C. Approved equivalents.

2.2 Fiberglass Doors and Frames

- A. Fiberglass doors shall be insulated core doors, 1-3/4" thick, of the sizes and type as shown on the drawings and as specified herein.
- B. Frames shall be pre-assembled units made of Grade A pine.
- C. Doorstops, latches, doorknobs, hinges, fasteners, etc., for all doors installed shall be provided by the Contractor.

2.3 Door Hardware

- A. Door hardware shall be equivalent to Sargent.
- B. All hardware shall be lever-style handles with a dull chrome finish.
- C. Door closers shall be full rack and pinion type contained in a permanent mold aluminum body and equipped with a single valve.
- D. Hinges shall be full mortise type, 4" x 4", concealed ball bearing, stainless steel, three (3) per door, equivalent to Hager Tri Con Hinges #BB800.
- E. Door stops for interior doors shall be as manufactured by H.B. Ives, wall mounted #65 door stop, aluminum finish.
- F. See Schedule in Part 4 of this Section for hardware schedule.

2.4 Weather-stripping

- A. Acceptable Manufacturers:
 - 1. National Guard Products, Inc.
 - 2. Reese
 - 3. Approved equivalents.
- B. Head and jamb weather-stripping shall be nylon brush gasket, National Guard Products #C607, 1/2" x 1/4" or approved equivalent.
- C. Door bottom seal shall be equivalent to National Guard Products aluminum and vinyl seal, and surface mount nylon brush gasket #D608.

PART 3 - EXECUTION

3.1 Doors and Frames

- A. Install units in compliance with the manufacturer's specifications and as approved by the Engineer.
- B. Frames must be rigid and present a neat appearance.
- C. Frames must be installed with not less than three wall anchors per jamb and an anchor to the floor at each jamb.
- E. The partition shall enter the frame so that the two work as a unit.
- F. Install all units plumb, level, straight and snugly fitted.
- G. Take care not to damage door surface. Defects in surface finish such as hammer marks, scratches, chips, etc., shall be repaired to the satisfaction of the Engineer and Owner.

3.2 Hardware

- A. Install hardware on all doors as specified in Door Schedule in Part 4.
- B. Install doorstops for all doors at heights recommended by the manufacturer.
- C. Provide necessary shims and blocks to properly install units.

3.3 Finish

- A. Paint all metal doors as shown in Finish Schedule of the Specifications, Section 09000.
- B. All colors and products are to be selected and approved by the Engineer and Owner.

3.4 Cleanup and Protection

- A. Clean all doors completely. Wash all windows with approved glass cleaner.
- B. Protect all door units, replacing any breakage or defective parts until accepted by Owner.

PART 4 - SUPPLEMENTAL SPECIFICATIONS

4.1 Door, Frame and Hardware Schedule

DOOR #	SIZE	MATERIAL	TYPE	HARDWARE FUNCTION	REMARKS
D1	3' - 0" x 6' - 8"	Insulated Fiberglass	Flush	Entrance	With closer

4.2 Key Schedule

- A. Key door to Owner's existing master key system.
- B. Provide six copies of each key.

END OF SECTION

SECTION 08360

OVERHEAD DOORS

PART 1 - GENERAL

1.1 Summary

- A. Work Included: Furnish and install overhead doors and accessories of the types, sizes and styles in the locations shown on the Drawings.
- B. Related Work:
 - 1. Carpentry - Division 6

1.2 Shop Drawings

- A. Six (6) copies of shop drawings shall be submitted to the Engineer for all doors fabricated off site and to be installed on site.
- B. All shop drawings shall be submitted to the Engineer for review at least ten (10) days prior to incorporation into the work. All shop drawings shall be reviewed by the Engineer prior to incorporating into the work.

1.3 Delivery, Storage and Handling

- A. Deliver doors and all necessary equipment in manufacturers unopened containers.
- B. Store materials in a protective area to prevent damage of any nature.
- C. Handle using manufacturer's recommendations.

1.4 Protection

- A. Protect doors and equipment during and after installation from splashing or the accumulation of paint, concrete, mortar, or other foreign material.

PART 2 - PRODUCTS

2.1 Materials

- A. Doors shall be of the following construction:
 - 1. 1 ½" minimum thick sections.
 - 2. Galvalume interior and exterior skin.
 - 3. Combined installed R value of 14 minimum.
 - 4. Thermal break between all interior and exterior metal skin.
- B. Acceptable Manufacturers:
 - 1. Overhead Door Corporation, Series 591.
 - 2. Raynor Company, ThermaSeal Basic
 - 3. Approved Equivalents.

2.2 Seals

- A. Doors shall be equipped with the following seals:
 - 1. Joint seals between sections.
 - 2. Perimeter seals on ends of the exterior surface.
 - 3. A top seal in the top section to seal against the header.
 - 4. An astragal on the bottom section.
- B. Doors shall have an air infiltration rate of 0.1 CFM/ft at a pressure difference of 0.112 H 0.
- C. All seals shall be factory installed.

2.3 Weather-stripping

- A. Head and jamb weather-stripping shall be EPDM rubber tube seals and door bottoms shall be rubber bulb-type seal.

2.4 Tracks and Hardware

- A. Doors shall be equipped with 3" galvanized tracks.
- B. Track rollers shall be hardened steel with ball bearing.
- C. Tracks shall be angle mounted.
- D. Hinges shall be galvanized steel, strap type hinge with 20 gauge reinforcement strips at each hinge location.

2.6 Operators

- A. Provide jackshaft type door operator Min. 1/2 HP, equivalent to LiftMaster Model DJ Industrial Duty.
- B. Provide three-button control. Up/Down/Stop
- C. Provide auxiliary chain hoist.
- E. Provide solenoid brake to prevent door coasting.
- F. Provide emergency manual operation feature.
- G. Provide external radio control terminals.

2.7 Options

- A. Doors shall be equipped with a bottom-sensing edge that stops or reverses the door's travel when meeting an obstruction.
- B. Provide six portable remote control radio transmitters for door operator.

2.8 Warranty

- A. Doors and hardware shall have a manufacturer's warranty for one year for all materials and workmanship.

PART 3 - EXECUTION

3.1 Installation

- A. Install doors and hardware in accordance with approved shop drawings and manufacturer's instructions.
- B. Test operation of doors and make all necessary adjustments to insure proper operation.

END OF SECTION

SECTION 09900

PAINTING AND STAINING

PART 1 - GENERAL

1.1 Summary

- A. This work shall consist of all labor, materials and equipment necessary to complete painting as shown on the Drawings and as specified herein.
- B. In general, all unfinished surfaces shall be painted or stained unless otherwise specified.

1.2 Submittals

- A. Contractor shall submit color samples, manufacturer and paint specifications to the Engineer for review thirty (30) days prior to incorporation into the work. Provide six (6) copies of product information.

1.3 Scope of Work

- A. This work shall include prefinishing and painting or staining of all exposed surfaces and specified unexposed surfaces, except factory or prefinished surfaces. Also included is touching up of prefinished surfaces as required and/or as approved by the Engineer.

PART 2 - PRODUCTS

2.1 Paint, Stain, & Varnish

- A. All materials shall be top quality products of the type and texture as shown on the Drawings and/or as specified in Part 4 of these specifications.
- B. Acceptable manufacturers include: Glidden, Olympic, California, Benjamin Moore, Sherwin-Williams and other approved equivalents.
- C. All colors shall be as selected by the Engineer from samples submitted by the Contractor.

2.2 Painting Accessories

- A. Turpentine shall be pure gum spirits conforming to ASTM DB-65.
- B. Putty shall be as recommended by paint or stain manufacturers and as approved by the Engineer.

2.3 Shellac

- A. Shellac shall be bleached white shellac, four pound cut, conforming to ASTM D-360-71.

PART 3 - EXECUTION

3.1 Preparation

- A. Prior to painting or staining insure that all surfaces are finished and ready for application.
 - 1. Wood Surfaces:
 - a. Sand to smooth finish and clean all dust from surfaces. Fill all nail holes, cracks and other irregularities with approved putty. Pre-color all putty to be used under natural finish wood.
 - b. Shellac all knots and pitch streaks or pockets to prevent bleeding.
 - c. Apply prime coat as recommended by manufacturer. Sand lightly where necessary to smooth surface.

2. Metal Surfaces:
- a. Clean all grease, rust and dirt from surface. Feather edges of chipped paint on pre-painted items.
 - b. If so approved by the Engineer, sandblast or wire brush all metal surfaces to obtain a suitable surface for painting. This procedure will normally be required for refinishing previously painted surfaces which are chipping or peeling.
 - c. Prime metal surfaces with approved metal primers.
 - d. Galvanized and prefinished surfaces shall not be painted unless specified in Painting Schedule.

3.2 All Surfaces

- A. Apply paint or stain only to clean, dry surfaces. Do not paint or stain in the rain or in very humid conditions.
- B. Use masking tape, drop cloths and other means of protection to adequately protect adjacent surfaces from drips, spatters and overruns.

3.3 Application

- A. Apply paint or stain as recommended by the manufacturer on properly prepared surfaces according to the paint schedule on the Drawings or in Part 4 of these Specifications.
- B. Thoroughly brush or roll all coats to achieve a uniformly smooth coverage.
- C. Allow each coat to dry 48 hours or longer if recommended by manufacturer before applying subsequent coats.
- D. Do not apply paint, stain, varnish or shellac when temperatures are below 45°F unless provision for heating is made.
- E. All finishes shall be smooth, free from runs and sags, streaks, brush fibers and other defects. All edges shall be straight and sharp.
- F. Refinish and paint to match any existing adjacent areas which were disturbed as a result of the work.

3.4 Cleanup and Protection

- A. Clean all areas of drippings, spatters and debris. Remove all masking tape and clean glass and other areas as required.
- B. Touch up all defective areas to the satisfaction of the Engineer.
- C. Protect all surfaces until acceptance by the Owner.

3.5 Touch-Up Materials

- A. Provide Owner with at least one (1) unopened gallon can of all types and colors. Partially used cans shall also be left with the Owner.

PART 4 - SUPPLEMENTAL SPECIFICATIONS

4.1 Paint Schedule

<i>SURFACE</i>	<i>PRIMER</i>	<i>FINISH</i>
Fiberglass door and frame	1 coat acrylic latex	2 coats acrylic latex semi-gloss
Pipe Bollards	1 coat alkyd enamel rust inhibitor	2 coats alkyd enamel semi-gloss

END OF SECTION

SECTION 15622

EXHAUST FANS

PART 1 - GENERAL

1.1 Description

- A. Work Included: Provide roof mounted exhaust fans where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
- B. Related Work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.2 Quality Assurance

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods for proper performance of the work of this Section.

1.3 Submittals

- A. Submit: Shop drawings for all materials, equipment and accessories of this section.

PART 2 - PRODUCTS

2.1 Roof Mounted Exhaust Fans

- A. Furnish and install propeller- type roof fans, belt driven, 18,000cfm capacity, as manufactured by Loren Cook Co., Penn Ventilator or approved equivalents.
- B. Fan units shall be complete, including the following:
 - 1. Aluminum fan housing and hood with bird screen.
 - 2. Non-overloading, aluminum centrifugal fan wheel.
 - 3. Motor mountings with rubber-in-shear vibration eliminators.
 - 4. Sealed ball bearings.
 - 5. Adjustable V-belt drive or direct drive as scheduled.
 - 6. Single-speed, open motor with thermal overload protection and disconnect device as previously specified.
 - 7. Furnish with counter-balanced backdraft damper.
 - 8. Provide prefabricated 12" high roof curb with 2" of fiberglass insulation, for each fan. Curb shall be constructed of galvanized steel or aluminum and shall incorporate a built-in cant strip and be designed for installation on flat roof. Curb shall be installed, shimmed for proper roof pitch, leveled, and flashed by Roofing Contractor.
 - 9. Units furnished shall have been tested and rated in accordance with AMCA Bulletin No. 210.
 - 10. Fans shall be controlled with an adjustable speed control switch.

2.2 Other Materials

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

PART 3 - EXECUTION

3.1 Surface Conditions

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 Coordination

- A. Coordinate as required with other trades to assure proper and adequate provision of the work of those trades for interface with the work of this Section.

3.3 Preparation

- B. Flashing:
 - 1. Where items of the Section penetrate the roof, outer walls or waterproofing of any kind, provide under this Section all base flashing and counterflashing required at such penetration.

3.6 Testing and Adjusting

- A. Test and adjust each piece of equipment and each system as required to assure proper balance and operation.
 - 1. Test and regulate ventilation systems to conform to the air volumes shown on the approved design drawings.
 - 2. Make tests and adjustments in apparatus and ducts for securing the proper volume of air for each grille.
- B. Eliminate noise and vibration and assure proper function of all controls and operation in accordance with the approved design.

END OF SECTION

SECTION 16050

ELECTRICAL WIRING

PART 1 - GENERAL

1.1 Summary

- A. This work shall include all labor, materials, and equipment to install electrical wiring and accessories as shown on the drawings and as specified herein. Unless otherwise specified, this work shall include installing all wiring devices and making all electrical connections in other divisions.

1.2 References

- A. All methods and materials shall conform to the applicable local, State and Federal codes and standards and of the following references:
 - 1. The National Electrical Code (latest edition) NEC
 - 2. National Electrical Manufacturer's Association (NEMA)
 - 3. Underwriter's Laboratories (UL)
 - 4. American Society of Testing Materials (ASTM)

1.3 Permits, Fees, Licenses

- A. Contractor shall obtain and pay for all permits, fees, licenses and inspections required by appropriate jurisdictions in order to complete the work in accordance with applicable laws and codes. Provide a copy of the above along with any written inspection reports to the Engineer. Contractor shall contact the local power company prior to performing any work and arrange for meters and service connections.
- B. Contractor shall obtain a final certificate of compliance for all electrical work.
- C. All work shall be performed under the direct supervision of an electrician licensed in the State of Maine.

1.4 Submittals

- A. Contractor shall furnish the Engineer six (6) copies of shop drawings for review 30 days prior to incorporation into the work.
- B. Shop drawings or specifications shall be submitted for electrical wiring materials, panels, electrical equipment and controls.
- C. Contractor shall furnish two (2) additional copies of all shop drawings, operating manuals, service manuals, parts lists, warranties (completed and submitted) and any other appropriate information for use of the Owner upon completion of the Project. This information shall be in 3-ring binders or similar binding.

PART 2 - PRODUCTS

2.1 Wiring and Cable

- A. Conductors shall be copper, sized as per Article 310 of the NEC
- B. A minimum size of #12 AWG wire shall be used on 20 or less Amp circuits.
- C. Insulation shall have a minimum temperature rating of 75°C. (type THW) unless otherwise specified.
- D. Conductors shall be sized so as to prevent a voltage drop in excess of that recommended by the NEC
- E. A green, insulated grounding conductor shall be installed in all raceways and shall be sized as per Article 250 of the NEC
- F. Conductors for general wiring shall be limited to uses as specified by Articles 310 and 400 of the NEC
- G. Conductors over #8 shall be stranded.
- H. All conductors shall be insulated.
- I. Non-metallic sheathed cable may be used with the bare ground wire contained within the sheathing.

2.2 Electrical Accessories

- A. Outlet and junction boxes shall be UL-Approved and of appropriate sizes. Metallic boxes shall be used with metal conduit, non-metallic boxes shall be used with non-metal conduit providing the size is under 4" x 4". Metallic boxes shall be used for larger boxes. Junction boxes and other uncovered boxes shall be covered with a galvanized cover plate or approved equivalent.
- B. Wire nuts or other approved connectors shall be used for all connections. Use UL listed connectors of appropriate sizes.
- C. Cable clamps shall be used at all junction boxes, panels, fixtures and equipment.
- D. Provide all accessories required to fasten and install lighting units complete in place.

2.3 Conduit

- A. The following conduit types may be used except as otherwise shown on the drawings or as specified by the NEC:
 - 1. Rigid non-metallic tubing (PVC);
 - 2. Electrical metallic tubing (EMT);
 - 3. Rigid metal conduit;
 - 4. Other as approved by the NEC and the Engineer.
- B. All conduit shall be UL-Approved.
- C. The Contractor shall use the most economical method of wiring which meets the requirements of the National Electric Code with the following exceptions:
 - 1. All wiring underground or in concrete shall be in conduit (minimum Schedule 40 PVC);
 - 2. Above ground wiring, in locations exposed to the weather shall be concealed in rigid metal conduit.
 - 3. Contractor shall install wiring straight, neat, and with all runs being parallel to building walls.

2.4 Receptacles

- A. 15 and 20 Amp receptacles, as shown on the drawings, shall be Arrow-Hart or Leviton, specification grade, ivory color grounding.
- B. 30 and higher amp receptacles shall be Arrow-Hart or Leviton, grounding, 250 V, receptacles shall be 4 wire.
- C. All receptacles shall meet NEMA WDI and Federal Specification WC596.

2.5 Lighting Switches

- A. Switches shall be Arrow-Hart or Leviton, Specification Grade, ivory color, quiet action, 20 Amp rated. Provide SP, DP, 3W, 4W switches as shown on the Drawings. All switches shall have grounding terminal provided.
- B. Switches shall meet Federal Specification WS 896 and NEMA WD1.

2.6 Wire Tags

- A. All wiring shall be marked at each end with Brady Wire Tags.

2.7 Nameplates

- A. All electrical equipment installed by the Contractor shall be furnished with a nameplate.
- B. Nameplates shall be white core laminated plastic with minimum 1/4" high letters.
- C. Nameplates shall be fastened with screws.
- D. Provide Engineer with nameplate schedule prior to manufacturing.

2.9 Load Centers

- A. All panel boards shall have hinged doors with locks and a 10,000 Amp interrupting capacity.
- B. Breakers shall be plug-in type breakers unless otherwise specified in Part 4 or on the drawings, 1" per pole, 10,000 A.I.C.
- C. All sub-panel boards shall be equipped with a neutral bar insulated from the case enclosure and a ground bar electrically connected to the enclosure.
- D. The directory shall be typed-on under plastic.
- E. Acceptable manufacturers:
 - 1. General Electric
 - 2. ITE

- 3. Square-D.
- F. Panels shall have weatherproof enclosures.
- G. Ty-wraps shall be used to bundle wiring.
- H. Main disconnect shall be of the breaker type complete with enclosure of the size and type as shown on the plans.

PART 3 - EXECUTION

3.1 Installation

- A. All work shall be done in compliance with the National Electrical Code and applicable local, State and Federal rules and regulations as well as the local electric power company. Contractor shall coordinate his work with the local power company.
- B. Provide all miscellaneous wire and materials to complete the work. It is not intended that each individual item be shown on the drawings or specified herein. The drawings show general locations and sizes of major equipment and fixtures and devices. See panel schedule and drawings for details.
- C. Non-metallic sheathed cable, when allowed, shall be concealed in walls, ceilings or conduit.
- D. All conduit shall be concealed except where otherwise shown on the drawings or approved by the Engineer.
- E. In general, all switches shall be installed four (4) feet above finish floor and receptacles two (2) feet above finish floor. Other locations shall be as shown on the plans or approved by the Engineer.
- F. Insure that all exposed switches, receptacles and fixtures are installed plumb, level and square and securely fastened.
- G. Install light fixtures where shown on the Drawings complete with lamps, lenses and all accessories securely fastened in place.

3.2 Conduit and Cable

- A. All conduit and cable shall be run as straight as possible using long sweep bends at corners and fastened with galvanized clips or hangers. Use bushings as required to protect wire.
- B. All conduit and wiring shall be concealed except in boiler rooms, garage areas, and other areas as specified in Part 4 or as shown on the drawings. Sheathed cable shall be run on backerboard and/or through bored holes.
- C. Underground conduit shall be free from water and other foreign material. Ends shall be applied or suitably sealed to prevent water entry.
- D. All underground connections and connections in exterior junction boxes up to three (3) feet above grade shall be waterproofed and suitable for submerged operation.

3.3 Grounding

- A. Provide all ground connections as required to junction boxes, conduit, receptacles, fixtures and equipment in accordance with the National Electrical Code.
- B. Provide ground rods where shown on the drawings or as required by Code.

3.4 Accessibility

- A. Install all fixtures, junction boxes, etc., to allow future access for repair or replacement.
- B. Install conduit terminations to allow wires to be pulled without difficulty or damage to wire.

3.5 Color Coding

- A. Color coding shall be as follows:

	<u>120/208/240 V.</u>	<u>277/480 V.</u>
Phase A	Black	Brown
Phase B	Red	Orange
Phase C (on wye circuits)	Blue	Yellow
Wild (on Delta circuits)	Orange	N/A
Neutral	White	White/Stripe
Grounding	Green	Green

- B. Tape at each end and junction box, installed in accordance with the NEC may be used to color code conductors over #12.
- C. Comply with NEC, Article 2.10-5 for grounded conductors for various voltages or systems.

3.6 Testing

- A. Test all circuits, fixtures and equipment to the satisfaction of the local electrical inspector and Engineer.
- B. Replace any defective fixtures or materials at no cost to the Owner.
- C. Prior to the start of checkout and testing, insure that all equipment is properly and permanently identified.
- D. Check the bearings of all rotating electrical apparatus and, if required, have supplier fill with the grease or oil as recommended by the manufacturers.
- E. Motors shall be checked for rotation and, if necessary, reversed.
- F. All control circuits shall be functionally checked to see that their operation and sequence are correct. Any adjustable switches such as float switches, limit switches and timers shall be adjusted for proper operation.
- G. Maintain written and properly witnessed test and check-out reports and submit these to the Engineer for Owner prior to final acceptance of facilities.
- H. Just prior to acceptance of the lighting facilities, clean all lighting fixtures and relamp where required at no additional cost to the Owner.

3.7 Cleanup

- A. Remove all debris, excess materials and trimmings from the site.
- B. Clean all exposed switch and cover plates and all exposed equipment.
- C. Prior to energizing switchgear equipment, motor control centers, motors, etc., thoroughly vacuum clean the equipment with an industrial type vacuum cleaner.

END OF SECTION

SECTION 16500

LIGHTING

PART 1 - GENERAL

1.1 Summary

- A. This work shall include all labor, materials and equipment necessary to install lighting fixtures and accessories as shown on the drawings and as specified herein.
- B. All work shall conform to the National Electrical Code and other applicable codes.

1.2 Submittals

- A. Contractor shall submit six (6) copies of shop drawings of all lighting equipment and accessories at least 30 days prior to incorporation into the work.
- B. Provide photometric data on all lighting units.

1.3 Permits

- A. Contractor shall obtain and pay for electrical permit from local electrical inspector.
- B. Copies of the permit shall be sent to Owner and the Engineer.

PART 2 - PRODUCTS

2.1 Light Fixtures

- A. All fixtures shall be UL-Listed.
- B. All fixtures shall be designed for the particular application on the Project. All exterior fixtures shall be weatherproof.
- C. Plastic lenses shall be 100% virgin acrylic.
- D. Acceptable manufacturers:
 - 1. Columbia
 - 2. Lithonia
 - 3. General Electric
 - 4. Approved equivalents.
 - 5. Fixture schedule is shown on the drawings.

2.3 Accessories

- A. Provide all accessories required to fasten and install lighting units complete in place.

PART 3 - EXECUTION

3.1 Installation

- A. Install light fixtures where shown on the drawings complete with lamps, lenses and all accessories securely fastened in place.
- B. Follow manufacturer's instructions and recommendations completely.
- C. Insure that recessed light fixtures are properly installed with proper clearances for insulation and supplied with thermal protection.
- D. Light fixtures shall be installed in accordance with the latest edition of the "National Electrical Code".
- E. Underground conduit shall be free from water and other foreign materials. Ends shall be capped or suitably sealed to prevent water entry.

3.2 Cleanup and Testing

- A. Test all fixtures and equipment to the satisfaction of the Engineer.
- B. Repair or replace any defective fixtures, lamps or finishes.
- C. Clean all fixtures and lenses at the completion of the Project.

3.3 Warrantee

- A. All materials and work shall be warranted for one (1) year from date of acceptance by Owner.
- B. Contractor shall supply a minimum of 10% spare lamps and 5% spare ballasts to the Owner at completion.
- C. Any additional lamps beyond the spares provided shall be replaced at no additional cost to the Owner during the warranty period.

END OF SECTION